

# **EXHIBIT 14**

Michael Crowley, Ph.D.

Page 1

IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF NEW JERSEY

- - -

IN RE: JOHNSON & :  
JOHNSON TALCUM POWDER :  
PRODUCTS MARKETING, :  
SALES PRACTICES, AND : NO. 16-2738  
PRODUCTS LIABILITY : (FLW) (LHG)  
LITIGATION :  
:  
THIS DOCUMENT RELATES :  
TO ALL CASES :

- - -

January 4, 2019

- - -

Videotaped deposition of Michael Crowley, Ph.D., produced as a witness at the instance of the Defendant, Johnson & Johnson entities, and duly sworn, was taken in the above-styled and numbered cause on the 4th day of January, 2019, from 9:07 a.m. to 5:59 p.m., before Steven Stogel, CSR in and for the State of Texas and Certified LiveNote Reporter, reported by machine shorthand the Hilton Austin Hotel, 500 East 4th Street, Austin, Texas, pursuant to the Federal Rules of Civil Procedure and the provisions stated on the record or attached hereto.

- - -

GOLKOW LITIGATION SERVICES  
877.370.3377 ph | 917.591.5672 fax  
deps@golkow.com

Michael Crowley, Ph.D.

Page 2

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

APPEARANCES:

BEASLEY ALLEN LAW FIRM

BY: P. LEIGH O'DELL, ESQ.

BY: MARGARET M. THOMPSON, ESQ.

218 Commerce Street

Montgomery, Alabama 36104

(800) 898-2034

leigh.odell@beasleyallen.com

Margaret.Thompson@BeasleyAllen.com

- and -

BURNS CHAREST, LLP

BY: AMANDA KLEVORN, ESQ.

365 Canal Street, Suite 1170

New Orleans, Louisiana 70130

(504) 799-2847

aklevorn@burnscharest.com

Representing the Plaintiffs'

Steering Committee

TUCKER ELLIS, LLP

BY: MICHAEL C. ZELLERS, ESQ.

515 South Flower Street

Forty Second Floor

Los Angeles, California 90071-2223

(213) 430-3301

michael.zellers@tuckerellis.com

- and -

SKADDEN, ARPS, SLATE, MEAGHER & FLOM LLP

BY: GEOFFREY M. WYATT, ESQ.

1440 New York Avenue N.W.

Washington, DC 20005

(202) 371-7008

geoffrey.wyatt@skadden.com

Representing the Defendant, Johnson &

Johnson entities

Page 4

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

---

I N D E X

---

Testimony of: MICHAEL CROWLEY, Ph.D.

By Mr. Zellers 9, 364

By Mr. Ferguson 333, 367

By Ms. Appel 339

By Ms. O'Dell 341, 367

---

E X H I B I T S

---

NO.	DESCRIPTION	PAGE
1.	Notice of Deposition	11
2.	Invoices from Theridian Technologies	13
3.	Cross-Reference of CAS Numbers	18
4.	FDA Guidance Document	21
5.	Book Entitled "Excipient Toxicity and Safety"	22
6.	Thumb Drive with Report of Dr. Crowley and Underlying Data	23
7.	Report of Dr. Crowley	25

Page 3

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

APPEARANCES: (Cont'd)

GORDON & REES, LLP

BY: KENNETH J. FERGUSON, ESQ.

816 Congress Avenue, Suite 1510

Austin, Texas 78701

(512) 391-0197

kferguson@gordonrees.com

- and -

COUGHLIN DUFFY, LLP

BY: JONATHAN F. DONATH, ESQ.

350 Mount Kemble Avenue

Morristown, New Jersey 07962

(973) 267-0058

jdonath@coughlinduffy.com

Representing the Defendant, Imerys

Talc America, Inc.

TUCKER ELLIS, LLP

BY: SANDRA J. WUNDERLICH, ESQ.

100 South Fourth Street, Suite 600

Saint Louis, Missouri 63102

(314) 256-2550

sandra.wunderlich@tuckerellis.com

Representing the Defendant, PTI

Royston LLC and PTI Union LLC

SEYFARTH SHAW, LLP

BY: RENEE APPEL, ESQ.

(Via Telephone)

975 F Street, N.W

Washington, DC 20004

(202) 828-5371

rappel@seyfarth.com

Representing the Defendant, Personal

Care Products Counsel (PCPC)

ALSO PRESENT:

MR. SHANE RAMIREZ, Videographer

Page 5

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

---

E X H I B I T S (Cont'd)

---

NO.	DESCRIPTION	PAGE
8.	Curriculum Vitae of Dr. Crowley	26
9.	Reference Section from Dr. Crowley's Report	26
10.	Sources Considered Section from Dr. Crowley's Report	29
11.	EPA Article Entitled "Basic Information about Scientific Integrity"	85
12.	Office of Research Integrity Article Entitled "Definition of Research Misconduct"	89
13.	Anne C. Steinemann Article Entitled "Fragranced Consumer Products and Undisclosed Ingredients"	96
14.	Wikipedia Entry for "Mucous Membrane"	100
15.	The MSDS HyperGlossary: Sensitizer	103
16.	EPA Article Entitled "The NRC Risk Assessment Paradigm"	120
17.	Cosmetic Ingredient Review Procedures June 2018	155
18.	IFRA Document Entitled "About the Standards"	157

2 (Pages 2 to 5)

Michael Crowley, Ph.D.

Page 6				Page 8			
1	---			1	---		
2	E X H I B I T S (Cont'd)			2	DEPOSITION SUPPORT INDEX		
3	---			3	---		
4	NO. DESCRIPTION PAGE			4			
5	19. Index of IFRA Standards - 163			5	Direction to Witness Not to Answer		
6	48th Amendment			6	PAGE LINE		
7	20. IFRA Standard - Peru Balsam 167			7	None.		
8	Extracts and Distillates			8	Request for Production of Documents		
9	21. IFRA Standard - Peru Balsam 171			9	PAGE LINE		
10	Crude			10	16 11		
11	22. Article Entitled "FDA 173			11	Stipulations		
12	Removes 7 Synthetic Flavoring			12	PAGE LINE		
13	Substances from Food			13	None.		
14	Additives List"			14	Questions Marked		
15	23. Article Entitled "Evaluating 177			15	PAGE LINE		
16	the Potential Genotoxicity			16	None.		
17	of Phthalates Esters (PAEs)			17			
18	in Perfumes Using In Vitro			18			
19	Assays			19			
20	24. GHS Info Sheet No. 7 - 203			20			
21	Carcinogenicity			21			
22	25. IARC Monographs on the 239			22			
23	Evaluation of Carcinogenic			23			
24	Risks to Humans - Preamble			24			
	26. IARC Monograph Excerpts for 245						
	Styrene						
	27. IARC Monograph Excerpts for 258						
	d-Limonene						
	28. IARC Monograph Excerpts for 263						
	Coumarin						
	29. IARC Monograph Excerpts for 269						
	Eugenol						
Page 7				Page 9			
1	---			1	---		
2	E X H I B I T S (Cont'd)			2	THE VIDEOGRAPHER: Here begins		
3	---			3	the deposition of Dr. Michael Crowley.		
4	NO. DESCRIPTION PAGE			4	Today's date is January 4th, 2019. The		
5	30. IARC Monograph Excerpts for 275			5	time is 9:07 a.m.		
6	Benzophenone			6	Will the court reporter please		
7	31. SCHER Opinion on 290			7	swear in the witness?		
8	Classification of Musk Ketone			8	(Witness sworn)		
9	32. Defendant Johnson & Johnson 346			9	MR. ZELLERS: At the outset, the		
10	Consumer Inc.'s Supplemental			10	Johnson & Johnson defendants make an		
11	Answer to Plaintiffs' Second			11	objection to anyone attending this		
12	Set of Interrogatories No. 19			12	deposition remotely as the deposition		
13	33. Johnson's Baby Powder 349			13	protocol order does not provide for		
14	Fragrance Ingredients			14	remote attendance. We can begin.		
15	34. Shower to Shower Fragrance 351			15	MICHAEL CROWLEY, Ph.D.,		
16	Ingredients			16	having been first duly sworn, testified as		
17	35. Changes to Johnson's Baby 352			17	follows:		
18	Powder Fragrance Ingredients			18	---		
19				19	EXAMINATION		
20				20	---		
21				21	BY MR. ZELLERS:		
22				22	Q. Can you state your name, please?		
23				23	A. Michael Crowley.		
24				24	Q. Dr. Crowley, you are here to		

3 (Pages 6 to 9)

Michael Crowley, Ph.D.

Page 10	Page 12
<p>1 provide a deposition as an expert witness on 2 behalf of the plaintiffs. Is that right? 3 A. Yes. 4 Q. You've given deposition 5 testimony in the past? 6 A. Yes. 7 Q. On how many occasions? 8 A. I believe four. 9 Q. What types of cases were those? 10 A. Patent disputes and one contract 11 dispute. 12 Q. You are familiar with the 13 general rules we're going to follow. 14 Correct? 15 A. Yes. 16 Q. If at any time I ask you a 17 question or any of the counsel ask you a 18 question that you don't understand, please 19 don't answer it. Tell us you don't 20 understand, and I will repeat or rephrase the 21 question so it is clear to you. Can you do 22 that? 23 A. Yes. 24 Q. If you answer a question, then</p>	<p>1 Is that correct? 2 A. That's correct. 3 Q. At some point today on a break, 4 if you could just read through the document 5 request and the notice of deposition, because 6 I'd like to ask you the question, "Have you 7 produced all responsive documents?" Can you 8 do that at some point today? 9 A. Yes. 10 Q. You have in front of you your 11 computer. For what purpose do you have your 12 computer open today? 13 A. My report and the materials that 14 I viewed generating that report on it. 15 Q. Anything else on the computer 16 that you have with you here today -- 17 A. Well, yes. 18 Q. -- that's pertinent to this 19 deposition? 20 A. I don't think so. I mean, I 21 have scientific information on there that I 22 use in the normal course of doing my business 23 that are on the computer. 24 Q. Prior to the start of the</p>
Page 11	Page 13
<p>1 we will assume that you understood it. Is 2 that fair? 3 A. Yes. 4 Q. You are here today pursuant to a 5 notice of deposition. Is that right? 6 A. I was never given a notice. 7 Q. Let me provide you with a notice 8 of deposition, which we'll mark as Deposition 9 Exhibit 1. 10 (Exhibit No. 1 marked) 11 MS. O'DELL: We'll just add that 12 objections to the notice have been -- 13 objections have been served to certain 14 document requests that have been issued 15 in the notice, so I would just reassert 16 those objections at this point. 17 Prior to the beginning of the 18 deposition, I provided materials in 19 response to the document request that 20 plaintiffs deem non-objectionable, so 21 just so the record is clear on that. 22 BY MR. ZELLERS: 23 Q. Dr. Crowley, you have not seen 24 the notice of deposition, Exhibit 1, before.</p>	<p>1 deposition, Counsel for the plaintiffs 2 produced to us certain documents. I will 3 mark those. 4 (Exhibit No. 2 marked) 5 BY MR. ZELLERS: 6 Q. First is a series of invoices. 7 We'll mark your invoices as Deposition 8 Exhibit 2. 9 Just quickly going through the 10 invoices, it appears that the initial 11 invoice -- or at least the top invoice is for 12 Wednesday, May 30th, 2018. 13 Is that around the time that you 14 were retained in this matter? 15 A. I believe so. 16 Q. The invoices are addressed to 17 Ms. O'Dell at the Beasley Allen firm. Is 18 that the firm that has retained you with 19 respect to the work you've done in the talc 20 MDL? 21 A. Yes. 22 Q. The first page of Exhibit 2 is 23 Invoice 8015. We have Invoice 800 -- strike 24 that -- 8022, Invoice 8027, Invoice 8035,</p>

4 (Pages 10 to 13)

Michael Crowley, Ph.D.

Page 14	Page 16
<p>1 Invoice 8041, Invoice 8043, with the last 2 time entry on Invoice 8043 being October of 3 2018. 4 Are these all of the invoices 5 that you have generated in the talc MDL 6 matter? 7 A. No. 8 Q. What additional invoices have 9 you generated in the talc MDL matter? 10 A. Since that time, I've done some 11 more work in preparing the document, my 12 report, that I haven't submitted yet. I'll 13 submit an invoice for appearing here today. 14 MS. O'DELL: I think there was 15 some confusion there. 16 MR. ZELLERS: I'll clear it up. 17 BY MR. ZELLERS: 18 Q. It appears that you are a 19 regular biller in that each of the invoices 20 are done at the end of each month. Is that 21 your typical billing practice? 22 A. Yes. 23 Q. So we have invoices that are 24 generated on a monthly basis through the</p>	<p>1 Q. -- of 2019? 2 A. No. 3 Q. The last invoice -- 4 A. I'd have to go check when my 5 last invoice was. We sent the report in in 6 November, I think, so it was probably at the 7 end of November. 8 Q. What I would like to do is to 9 come back to this set of questions after the 10 break. 11 MR. ZELLERS: And, Ms. O'Dell, 12 if you could just check to see if there 13 are additional invoices. 14 BY MR. ZELLERS: 15 Q. What is your recollection of the 16 amount of time that you've spent on this 17 matter, the talc MDL matter, during the month 18 of November? 19 A. I have no recollection. I'd 20 have to go check the document. 21 Q. Are you able to give me an 22 estimate? 23 A. Well, I'll pull up the document 24 if you'd like.</p>
Page 15	Page 17
<p>1 invoices that -- or invoice that was 2 generated on November 1st of 2018. Is that 3 right? 4 A. Yes. 5 Q. Did you generate an invoice on 6 December 1st of 2018? 7 A. I believe I have, yeah. 8 Q. Do you have that here with you 9 today? 10 A. I have it on my computer. 11 Q. All right. You can print it 12 here today? 13 A. I believe so. I don't have 14 access to a printer, but if you can get me 15 access to a printer, I'll print it. 16 MS. O'DELL: I thought we had 17 all the invoices in the stack I gave 18 you. I will endeavor at a break to get 19 the second -- the last invoice. Just 20 an oversight. 21 BY MR. ZELLERS: 22 Q. Dr. Crowley, did you issue an 23 invoice on or about January 1st or 2nd -- 24 A. No.</p>	<p>1 Q. My question is: Can you give us 2 an estimate? 3 A. I'd prefer not. I'd prefer just 4 to look at my invoice and tell you what it 5 says. 6 Q. Can you give us an estimate as 7 to the amount of time that you spent in 8 December of 2018 relating to the talc MDL 9 matter? 10 A. (No audible response) 11 Q. You're pulling something up on 12 your computer. Is that correct? 13 A. Uh-huh. 14 Q. Okay. Do you need to do that in 15 order to try to answer that question? 16 A. I do. I don't recall -- I don't 17 think there were many hours in December. 18 MS. O'DELL: Just testify to 19 your recollection, Dr. Crowley, and to 20 the degree there's been an invoice 21 produced -- or given to us that I 22 haven't produced, as I mentioned to 23 Counsel, that's an oversight. It was 24 not intentional. I'll get that to you.</p>

5 (Pages 14 to 17)

Michael Crowley, Ph.D.

<p style="text-align: right;">Page 18</p> <p>1 But to the degree you have a</p> <p>2 memory or an estimate of hours, that's</p> <p>3 fine. Just give an estimate.</p> <p>4 A. Yeah. I think in December it</p> <p>5 was less than ten hours.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Do you have an estimate for</p> <p>8 November?</p> <p>9 A. I really -- I mean, I don't.</p> <p>10 Q. How much time have you spent</p> <p>11 during the first few days of this year, 2019,</p> <p>12 in preparation for the deposition here today?</p> <p>13 A. Less than ten.</p> <p>14 Q. The next document that you</p> <p>15 brought with you today -- or that has been</p> <p>16 produced by counsel for the plaintiffs</p> <p>17 appears to be a supplement to your report.</p> <p>18 We will mark that as Deposition Exhibit 3.</p> <p>19 (Exhibit No. 3 marked)</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. Deposition Exhibit 3 consists</p> <p>22 of -- it appears to be nine pages of</p> <p>23 information. The first page at the top has</p> <p>24 got a fragrance chemical description. The</p>	<p style="text-align: right;">Page 20</p> <p>1 A. No changes to my opinions.</p> <p>2 Q. When did you prepare Deposition</p> <p>3 Exhibit 3?</p> <p>4 A. It was before Christmas, I</p> <p>5 believe.</p> <p>6 Q. Can you be any more precise than</p> <p>7 that?</p> <p>8 A. Yes. I'll tell you the date.</p> <p>9 Q. Well, again, we don't want you</p> <p>10 to make this an exercise where you try to</p> <p>11 look up each answer. If you have a rough --</p> <p>12 A. I finished it on December 18th.</p> <p>13 Q. Thank you. Have you made any</p> <p>14 other changes or updates to your report?</p> <p>15 A. No.</p> <p>16 Q. You said that information was</p> <p>17 provided to you shortly before you produced</p> <p>18 your report. Is that right?</p> <p>19 A. Yes.</p> <p>20 Q. My recollection is that you</p> <p>21 produced a report in this matter and then a</p> <p>22 week or two later you produced an updated</p> <p>23 report. Is that right?</p> <p>24 A. No.</p>
<p style="text-align: right;">Page 19</p> <p>1 next column, J&amp;J CAS number. The next</p> <p>2 column, Crowley CAS number, and then</p> <p>3 comments.</p> <p>4 Can you tell us what Exhibit 3</p> <p>5 is?</p> <p>6 A. Yes. I think two or three days</p> <p>7 prior to submission of my expert report, we</p> <p>8 were provided with a document from J&amp;J that</p> <p>9 disclosed the chemical abstract service</p> <p>10 numbers for all of the fragrance chemicals.</p> <p>11 When I initiated work on this, I didn't have</p> <p>12 CAS numbers, so I had to identify them for</p> <p>13 the chemicals as I had been given them.</p> <p>14 So this document is a</p> <p>15 cross-reference that compares the CAS numbers</p> <p>16 provided by J&amp;J to those that I identified</p> <p>17 for the fragrance chemicals and describes if</p> <p>18 there is a dif- -- what these differences are</p> <p>19 and if it has any bearing on the data in my</p> <p>20 report.</p> <p>21 Q. How, if at all, does the</p> <p>22 information contained in Deposition Exhibit 3</p> <p>23 change or alter any of the opinions that</p> <p>24 you're offering in this matter?</p>	<p style="text-align: right;">Page 21</p> <p>1 MS. O'DELL: No. Object to the</p> <p>2 form.</p> <p>3 MR. ZELLERS: All right. I'll</p> <p>4 ask some specific questions when I get</p> <p>5 to that.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Your recollection is you have</p> <p>8 only produced one report --</p> <p>9 A. That's --</p> <p>10 Q. -- in this matter?</p> <p>11 A. That's correct.</p> <p>12 Q. The next item that was produced</p> <p>13 today in connection with your deposition by</p> <p>14 counsel for plaintiffs is Deposition</p> <p>15 Exhibit 4.</p> <p>16 (Exhibit No. 4 marked)</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. It appears to be an -- well, the</p> <p>19 title of Deposition Exhibit 4 is "Guidance</p> <p>20 for Industry Nonclinical Studies for the</p> <p>21 Safety Evaluation of Pharmaceutical</p> <p>22 Excipients."</p> <p>23 What is Deposition Exhibit 4?</p> <p>24 A. This is an FDA guidance document</p>



Michael Crowley, Ph.D.

Page 22	Page 24
<p>1 describing how pharmaceutical excipients 2 are -- inactive ingredients are to be 3 examined for safety. 4 Q. For what purpose did you bring 5 Deposition Exhibit 4 today? 6 A. This represents the FDA's 7 current thinking on how to examine inactive 8 ingredients for safety. 9 Q. What's the date of -- 10 A. This was issued in May of 2005. 11 Q. That is the most up-to-date 12 guidance document from the FDA. Is that 13 right? 14 A. I believe so. 15 Q. Do you believe that that 16 document applies to fragrance chemicals that 17 you're talking about here today? 18 A. Yes. 19 Q. Deposition Exhibit No. 5 is a 20 textbook. 21 MR. ZELLERS: We'll make 22 arrangements or figure out how to make 23 this a part of the record. 24 (Exhibit No. 5 marked)</p>	<p>1 or information is contained on Exhibit 6? 2 A. This has my expert report and 3 the underlying data upon which I relied to 4 generate that report. 5 Is it okay if I go ahead and 6 plug it in, or is that for you? 7 Q. Do you need to plug it in, or is 8 it already on your computer? 9 A. It's already there. 10 Q. No. Put that aside, and we'll 11 have the court reporter make a copy of that, 12 and that will be a part of this record. 13 Is there anything new or 14 additional on the thumb drive which we have 15 marked as Exhibit 6 that has either not been 16 produced here today or was a part of your 17 report? 18 A. I don't believe so. 19 MS. O'DELL: No. I can just say 20 that because I prepared the jump drive. 21 I think it might be just quicker 22 to use the jump drive to pull up 23 documents because of the internet 24 access in this room. So I'll just make</p>
Page 23	Page 25
<p>1 BY MR. ZELLERS: 2 Q. But it's titled "Excipient 3 Toxicity and Safety," edited by Myra Weiner 4 and Lois Kotkoskie, Volume 103. 5 A. Marcel Dekker is the publisher. 6 Q. It appears to be a 2007 7 publication. Can you tell us generally what 8 Exhibit 5 is? 9 A. It's a book describing how 10 toxicity and safety studies are to be 11 conducted for inactive ingredients. 12 Q. For what purpose have you 13 brought with you Exhibit 5 today? 14 A. For reference. 15 Q. Finally, you have brought with 16 you -- or has been produced through counsel 17 for plaintiffs a thumb drive, which we will 18 mark as Deposition Exhibit 6. 19 (Exhibit No. 6 marked) 20 BY MR. ZELLERS: 21 Q. Are you familiar with Deposition 22 Exhibit 6? 23 A. Yes. 24 Q. Can you tell us what documents</p>	<p>1 that as an observation. If you don't 2 have any objection to him using the 3 jump drive -- you're welcome to -- to 4 look at it in advance, but -- 5 BY MR. ZELLERS: 6 Q. Dr. Crowley, if, as we go along, 7 you need to make reference to the jump drive, 8 you know, please do. Tell us that you're 9 going to be making a reference to it so we're 10 all aware as to what you're doing and what 11 documents you are reviewing. 12 I do intend to give you hard 13 copies of the documents that I have questions 14 about, but if you need to plug in the jump 15 drive and refer to it, it's okay with me, as 16 long as you state on the record what it is 17 you're doing. 18 A. Okay. 19 Q. Your report in this matter we 20 will mark as Deposition Exhibit 7. 21 (Exhibit No. 7 marked) 22 BY MR. ZELLERS: 23 Q. Can you review Deposition 24 Exhibit 7 and tell us if that is your report?</p>

7 (Pages 22 to 25)



Michael Crowley, Ph.D.

Page 26	Page 28
<p>1 A. It looks like it, yes.</p> <p>2 MS. O'DELL: You're happy to</p> <p>3 offload whatever you have?</p> <p>4 MR. ZELLERS: Exactly. I'm</p> <p>5 going to insist that you all take a</p> <p>6 copy of Dr. Crowley's report.</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. A part of your report is your</p> <p>9 curriculum vitae or CV. Let's mark that as</p> <p>10 Deposition Exhibit 8.</p> <p>11 (Exhibit No. 8 marked)</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. And if you will just identify</p> <p>14 for us what Deposition Exhibit 8 is?</p> <p>15 A. It's my CV.</p> <p>16 Q. Is Deposition Exhibit 8 your</p> <p>17 current and up-to-date curriculum vitae?</p> <p>18 A. Yes.</p> <p>19 (Exhibit No. 9 marked)</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. Deposition Exhibit 9 is a</p> <p>22 four-page document. It is from your report,</p> <p>23 which is Exhibit 7. Deposition 9 are</p> <p>24 Pages 66 through 69 of your report, and the</p>	<p>1 you cite to in your report. Is that right?</p> <p>2 A. In the body of the report,</p> <p>3 that's correct. There were more things that</p> <p>4 I cited in the appendices.</p> <p>5 Q. Are the appendices a part of</p> <p>6 your report?</p> <p>7 A. Yes.</p> <p>8 Q. The references, what we have</p> <p>9 marked as Exhibit 9, is that a complete</p> <p>10 listing of all the citations in your report,</p> <p>11 including appendices?</p> <p>12 A. No.</p> <p>13 MS. O'DELL: Object to form.</p> <p>14 A. Yeah. No. There were reports</p> <p>15 from the literature, internet links within</p> <p>16 the appendices that do not appear in</p> <p>17 Section 7 of my report.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. In order, then, for counsel in</p> <p>20 this case to understand what is cited in your</p> <p>21 report, we need to look at the body of the</p> <p>22 report and take a look at the list of</p> <p>23 references. Is that correct?</p> <p>24 A. You need to look at the entire</p>
Page 27	Page 29
<p>1 caption at the top is "References."</p> <p>2 Can you look at Deposition</p> <p>3 Exhibit 9 and tell us what that is?</p> <p>4 A. This appears to be the reference</p> <p>5 section from my report.</p> <p>6 Q. What -- strike that.</p> <p>7 How do you use the term</p> <p>8 "reference"? What do you mean by "reference"</p> <p>9 when you put that --</p> <p>10 A. These are items that I cited</p> <p>11 within the report.</p> <p>12 MS. O'DELL: Do you need me to</p> <p>13 give something back?</p> <p>14 MR. ZELLERS: No. But this will</p> <p>15 be 10 as well as what I'm handing to</p> <p>16 you.</p> <p>17 MS. O'DELL: Okay.</p> <p>18 MR. ZELLERS: The witness just</p> <p>19 has 9 right now, which is the first</p> <p>20 document.</p> <p>21 MS. O'DELL: Okay.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. References to you, in which</p> <p>24 you're referring to, are the materials that</p>	<p>1 report, the body of the report and the</p> <p>2 appendices.</p> <p>3 Q. Did you prepare the reference</p> <p>4 list?</p> <p>5 A. I did.</p> <p>6 (Exhibit No. 10 marked)</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. Deposition Exhibit 10 also comes</p> <p>9 from your report, Pages 15, 16, and 17. I'm</p> <p>10 looking at the section of Deposition</p> <p>11 Exhibit 10 that begins "Sources Considered."</p> <p>12 Can you take a look at</p> <p>13 Exhibit 10 and tell us what that refers to?</p> <p>14 A. This is a list of sources that I</p> <p>15 considered during the generation of my</p> <p>16 report.</p> <p>17 Q. What is the difference between</p> <p>18 the references and the sources that you</p> <p>19 considered?</p> <p>20 A. Well, references are things that</p> <p>21 I cited, and sources considered are things</p> <p>22 that I looked at.</p> <p>23 Q. Is the listing of sources</p> <p>24 considered, Deposition Exhibit 10, a complete</p>

8 (Pages 26 to 29)

Michael Crowley, Ph.D.

<p style="text-align: right;">Page 30</p> <p>1 listing of the materials and sources that you 2 considered in preparing your report and in 3 developing your opinions in this case? 4 A. I believe so. I tried to 5 capture them all. I may have missed a few. 6 Q. How would you define the area of 7 expertise in which you're offering opinions 8 in this case? 9 A. Chemistry, molecular 10 pharmaceuticals, formulation science, 11 pharmacology, toxicology. 12 Q. You consider yourself to be an 13 expert in each of those subject areas? 14 A. I consider myself to be an 15 expert in chemistry and pharmaceutical 16 science, as well as formulation matters. 17 Q. Anything else? 18 A. I think that's a pretty good 19 descriptor. 20 Q. Deposition Exhibit 7 is your 21 report in this case. Does that report 22 contain all of the opinions that you intend 23 to offer as a witness in this matter? 24 A. Yes.</p>	<p style="text-align: right;">Page 32</p> <p>1 is the safety profile, and what's known about 2 it. 3 Q. Are the opinions which you're 4 rendering in this case limited to the 5 fragrance components of the talcum powder 6 products manufactured by Johnson &amp; Johnson 7 Consumer Products, Inc.? 8 MS. O'DELL: Object to form. 9 A. I'm not sure I understand your 10 question. 11 BY MR. ZELLERS: 12 Q. The opinions that you are 13 rendering in this case, are they limited to 14 the fragrance components of the talcum powder 15 products manufactured by Johnson &amp; Johnson 16 Consumer Products, Inc.? 17 A. Yes. 18 Q. And -- I'll strike that. 19 Can we agree that when I refer 20 to either products or talc products or baby 21 powder or Shower to Shower, that I'm 22 referring to the baby powder product 23 manufactured by Johnson &amp; Johnson Consumer 24 Products, Inc., and the Shower to Shower</p>
<p style="text-align: right;">Page 31</p> <p>1 Q. Is the report accurate? 2 A. I believe it is. 3 Q. Is it complete? 4 A. I believe so. 5 Q. Appendix A, which is a baby 6 powder fragrance chemical review, what was 7 the purpose of you preparing that appendix? 8 A. I was asked to review the 9 physical and chemical properties of each of 10 these fragrance chemicals, and I created that 11 list to capture the results of the evidence 12 that I found. 13 Q. How did you decide what 14 information to include in Appendix A? 15 A. Well, I was asked a couple of 16 questions, as described in my report, and 17 that seemed to be a logical framework in 18 which to collate the information. 19 And, frankly, it's consistent 20 with how a formulation scientist would 21 consider inactive ingredients when creating a 22 new composition. So you consider what are 23 the properties of these materials, both from 24 a chemical and biological perspective, what</p>	<p style="text-align: right;">Page 33</p> <p>1 product formerly manufactured by Johnson &amp; 2 Johnson Consumer Products, Inc.? 3 MS. O'DELL: Object to form. 4 A. I can agree to that 5 understanding. 6 BY MR. ZELLERS: 7 Q. You do not have an opinion -- or 8 not expressing any opinions in this case as 9 to whether or not talc products are 10 contaminated with asbestos. Is that right? 11 A. I was not asked to consider 12 that. 13 Q. Do you think you have produced 14 in this matter all of your file relating to 15 the expert work that you have done? And by 16 "produced," I mean in your report and as 17 supplemented by the exhibits that we've 18 marked here today. 19 A. I believe so. 20 Q. Did anyone assist you in 21 preparing your report? 22 A. Yes. 23 Q. Who assisted you in preparing 24 your report?</p>

Michael Crowley, Ph.D.

Page 34	Page 36
<p>1 A. My wife.</p> <p>2 Q. Your wife's name is?</p> <p>3 A. Carrie, C-A-R-R-I-E, Asher,</p> <p>4 A-S-H-E-R, Crowley.</p> <p>5 Q. What did Ms. Asher Crowley do to</p> <p>6 assist you in preparing your report in this</p> <p>7 matter?</p> <p>8 A. So she helped me identify some</p> <p>9 of the fragrance chemicals.</p> <p>10 Q. Anything else?</p> <p>11 A. No.</p> <p>12 Q. Do you bill separately for the</p> <p>13 services of your wife, Ms. Asher Crowley?</p> <p>14 A. Yes.</p> <p>15 Q. When I go back and I look</p> <p>16 through the invoices that have been produced</p> <p>17 and that we've marked as Exhibit 2, will I</p> <p>18 see references to Ms. Asher Crowley?</p> <p>19 A. I think you'll see a different</p> <p>20 bill rate for her time.</p> <p>21 Q. Your bill rate is what?</p> <p>22 A. \$600 an hour.</p> <p>23 Q. Is your bill rate the same for</p> <p>24 doing the review and preparation of the</p>	<p>1 A. No.</p> <p>2 Q. Are you aware of any documents</p> <p>3 relating to your review in this matter that</p> <p>4 have not been identified either as sources</p> <p>5 considered or in your reference list?</p> <p>6 A. I don't think so. I mean, I've</p> <p>7 seen some things in the news recently, but</p> <p>8 they didn't impact my report.</p> <p>9 MS. O'DELL: I'll just add for</p> <p>10 the record: Other than what's been</p> <p>11 marked as an exhibit here, just to make</p> <p>12 it clear.</p> <p>13 MR. ZELLERS: Yes.</p> <p>14 A. I did my best to keep track of</p> <p>15 and provide either -- in the references or,</p> <p>16 you know, disclosed within sources considered</p> <p>17 or within the appendices everything that I</p> <p>18 looked at.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. When you were -- strike that.</p> <p>21 Were you first contacted by</p> <p>22 Ms. O'Dell to become involved as an expert in</p> <p>23 this matter?</p> <p>24 A. No. Margaret Thompson initially</p>
Page 35	Page 37
<p>1 report as it is for sitting for a deposition</p> <p>2 here today?</p> <p>3 A. Yes.</p> <p>4 Q. Is your hourly rate of \$600 an</p> <p>5 hour the same for any trial testimony or</p> <p>6 hearing testimony that you may provide?</p> <p>7 A. Yes.</p> <p>8 Q. Ms. Asher Crowley, what is her</p> <p>9 billing rate?</p> <p>10 A. I think it was \$300 an hour.</p> <p>11 Q. Any other services or assistance</p> <p>12 that Ms. Crowley provided to you in terms of</p> <p>13 preparing your report and developing your</p> <p>14 opinions in this matter?</p> <p>15 A. The opinions are mine. She did</p> <p>16 not provide any opinions. She just simply</p> <p>17 helped me identify some of the fragrance</p> <p>18 chemicals.</p> <p>19 Q. Is there anything else that she</p> <p>20 did other than help to identify some of the</p> <p>21 fragrance chemicals?</p> <p>22 A. No.</p> <p>23 Q. Anyone else who assisted you in</p> <p>24 the preparation of your report?</p>	<p>1 contacted me.</p> <p>2 Q. When Ms. Thompson contacted you,</p> <p>3 you believe it was either April or May --</p> <p>4 strike that.</p> <p>5 You believe it was May of 2018?</p> <p>6 A. That's about the right</p> <p>7 timeframe.</p> <p>8 Q. I'm looking at --</p> <p>9 A. I don't recall the exact date.</p> <p>10 Q. I'm looking at Deposition</p> <p>11 Exhibit 2, and that appears to be the first</p> <p>12 time entry that you have on this matter.</p> <p>13 Does that refresh your recollection?</p> <p>14 A. I got a contact. We went and</p> <p>15 talked by phone and had a few additional</p> <p>16 conversations before I agreed to take this</p> <p>17 particular matter on. So that would</p> <p>18 represent -- what you're looking at is the</p> <p>19 first item I billed.</p> <p>20 And at the time that we first</p> <p>21 met, I was very busy with some other</p> <p>22 projects, and I couldn't start working on</p> <p>23 this immediately. So I don't recall the</p> <p>24 exact date that we first met. I signed a</p>

10 (Pages 34 to 37)

<p style="text-align: right;">Page 38</p> <p>1 protective order and engagement letter. I 2 would consider that when we first got 3 engaged. We can get you, you know, those 4 dates if you'd like. 5 Q. Does April or spring -- strike 6 that. 7 Does April or May of 2018 sound 8 about right? 9 A. Yes. 10 Q. What did Ms. Thompson ask you to 11 do with respect to this matter? 12 A. She indicated that she and her 13 colleagues were looking for an expert to 14 review the fragrance chemicals in the talcum 15 powder products and provide some additional 16 information. 17 Q. When were you first asked to 18 prepare a report? 19 A. I would say midsummer, June, 20 July. 21 Q. Were you given any additional 22 instruction in terms of what plaintiffs' 23 counsel wanted you to do or were requesting 24 that you do in this matter around the time</p>	<p style="text-align: right;">Page 40</p> <p>1 deal with those objections at a later time. 2 So, once she has made her objection, you can 3 go ahead and answer the question as long as 4 you understand it. 5 A. Okay. I'm sorry. Can you 6 repeat the question? 7 Q. Sure. This additional topic 8 that you were asked to consider by 9 plaintiffs' counsel, you never got to the 10 point of considering it or formulating any 11 opinions. Is that right? 12 A. I did put some time in 13 considering it, but I ran out of time to 14 properly research it, and I think I won't be 15 rendering an opinion on it today. 16 Q. Any other topics that you were 17 asked to address by either Ms. Thompson or 18 any of the counsel for plaintiffs in this 19 matter? 20 A. No. 21 Q. Originally defense counsel were 22 provided with a report that was dated 23 November 12th of 2018. We then received a 24 second slightly revised report around</p>
<p style="text-align: right;">Page 39</p> <p>1 that you were asked to prepare a report? 2 A. I mean, the two questions that 3 appear in my report were the instructions. 4 Q. Did plaintiffs' counsel in the 5 talc MDL ask you to address any other 6 questions? 7 A. I was briefly asked to consider 8 reviewing the flotation process used in the 9 talc manufacturing. 10 Q. Did you decline that? 11 A. I ran out of time. I didn't 12 have time. 13 Q. You are expressing no opinions, 14 then, with respect to the flotation process 15 involved in the talc processing. Is that 16 right? 17 MS. O'DELL: Object to form. 18 You may answer. 19 A. Sorry. I couldn't hear you. 20 MS. O'DELL: You may answer. 21 BY MR. ZELLERS: 22 Q. Yeah. As we go along today, 23 Counsel will make some objections. She's 24 doing that just to protect the record. We'll</p>	<p style="text-align: right;">Page 41</p> <p>1 December 4th of 2018. Are you familiar with 2 that? 3 A. No. I think -- I think 4 Ms. O'Dell told me that they originally 5 submitted an unsigned copy, and when they 6 recognized that, they resubmitted the signed 7 copy, something to that effect. 8 MS. O'DELL: I would just state 9 for the record the incorrect PDF was 10 put in the Dropbox. That's what 11 happened. So -- and then once we 12 realized that, we provided the correct 13 version. 14 BY MR. ZELLERS: 15 Q. Deposition Exhibit 7 is your 16 final report with respect to this matter. Is 17 that right? 18 A. I believe so. 19 Q. That is the report that contains 20 all of the opinions that you intend to 21 express in the talc MDL. Is that right? 22 A. Yes. 23 Q. Have you been disclosed as an 24 expert in any other talcum powder proceeding</p>

<p style="text-align: right;">Page 42</p> <p>1 aside from this matter, the talc MDL?</p> <p>2 A. No.</p> <p>3 Q. Have you done any expert work or</p> <p>4 consulting work in any other talcum powder</p> <p>5 matters?</p> <p>6 A. No.</p> <p>7 Q. What percentage -- well, strike</p> <p>8 that.</p> <p>9 You work for a consulting firm.</p> <p>10 Is that right?</p> <p>11 A. I own a consulting firm.</p> <p>12 Q. The name of that consulting firm</p> <p>13 is what?</p> <p>14 A. Theridian Technologies, LLC.</p> <p>15 Q. Do you devote 100 percent of</p> <p>16 your professional time to your work for that</p> <p>17 consulting firm?</p> <p>18 A. No.</p> <p>19 Q. What percent or -- strike that.</p> <p>20 What percent of your</p> <p>21 professional time do you devote to your</p> <p>22 consulting firm Theridian Technologies?</p> <p>23 A. Somewhere between two-thirds and</p> <p>24 three-quarters, I would say.</p>	<p style="text-align: right;">Page 44</p> <p>1 A. Yes.</p> <p>2 Q. Are there any employees of</p> <p>3 Theridian Technologies, LLC, other than</p> <p>4 yourself?</p> <p>5 A. My wife.</p> <p>6 Q. Any others?</p> <p>7 A. No.</p> <p>8 Q. You -- strike that.</p> <p>9 What percent of your time at</p> <p>10 Theridian Technologies involves legal or</p> <p>11 litigation consulting?</p> <p>12 A. Time, probably 25 percent.</p> <p>13 Q. In terms --</p> <p>14 A. I mean, it varies. I mean,</p> <p>15 sometimes it's more than others, but over the</p> <p>16 course of a year, maybe 25 percent.</p> <p>17 Q. In terms of income of Theridian</p> <p>18 Technologies, what percent of income is</p> <p>19 accounted for by legal consulting work?</p> <p>20 A. Again, it varies year to year.</p> <p>21 It's probably somewhere in the 10 to</p> <p>22 20 percent range.</p> <p>23 Q. You told us that you serve as an</p> <p>24 expert in other cases. Is that right?</p>
<p style="text-align: right;">Page 43</p> <p>1 Q. How do you spend your other</p> <p>2 professional time?</p> <p>3 A. I co-founded a startup called --</p> <p>4 it was originally called Oticus Laboratories.</p> <p>5 It's -- it's been renamed Oticara</p> <p>6 Corporation. I've recently closed a</p> <p>7 significant funding round. We're doing</p> <p>8 clinical studies.</p> <p>9 And I serve on the board of</p> <p>10 another company, so --</p> <p>11 THE REPORTER: Of another</p> <p>12 company?</p> <p>13 THE WITNESS: Yes.</p> <p>14 THE REPORTER: Try to keep your</p> <p>15 voice up for me.</p> <p>16 THE WITNESS: Sorry.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. What is the name of the company</p> <p>19 that you serve on the board of?</p> <p>20 A. Texas EnteroSorbents.</p> <p>21 Q. Is it accurate that anywhere</p> <p>22 from two-thirds to three-quarters of your</p> <p>23 professional time are spent by you working as</p> <p>24 a consultant?</p>	<p style="text-align: right;">Page 45</p> <p>1 A. Yes.</p> <p>2 Q. Is this the first time that you</p> <p>3 have served as an expert in a case involving</p> <p>4 an allegation of personal injuries?</p> <p>5 A. Yes.</p> <p>6 Q. Is this the first time that you</p> <p>7 have served as an expert in a product</p> <p>8 liability matter?</p> <p>9 A. Yes.</p> <p>10 Q. The depositions that you have</p> <p>11 given -- strike that.</p> <p>12 You have given, you thought,</p> <p>13 four or five depositions previously?</p> <p>14 A. I think four.</p> <p>15 Q. Two of the matters you've</p> <p>16 identified. One as Grunenthal versus --</p> <p>17 A. It's pronounced Grunenthal.</p> <p>18 Q. Grunenthal versus Teva, and then</p> <p>19 a second matter of Ciprodex. What types of</p> <p>20 matters were those?</p> <p>21 A. Patent disputes.</p> <p>22 Q. What areas of expertise were you</p> <p>23 testifying in?</p> <p>24 A. Chemistry, formulation,</p>



Michael Crowley, Ph.D.

Page 46	Page 48
<p>1 stability.</p> <p>2 Q. Were you serving as an expert</p> <p>3 for the plaintiff or the defense in those</p> <p>4 matters?</p> <p>5 A. One was plaintiff. The other</p> <p>6 was defense.</p> <p>7 Q. Which one was plaintiff?</p> <p>8 A. So the Grunenthal case I was --</p> <p>9 the generic companies were suing Grunenthal,</p> <p>10 so I was working for the generic companies.</p> <p>11 I presume that's the plaintiffs.</p> <p>12 In the Ciprodex matter, I was --</p> <p>13 Alcon Laboratories, I was working on their</p> <p>14 behalf. They were the innovator company.</p> <p>15 Q. What other matters have you</p> <p>16 provided deposition testimony in?</p> <p>17 A. I was an expert on behalf of</p> <p>18 Novartis. The drug was Myfortic. That was</p> <p>19 more than five -- five years ago, though.</p> <p>20 Q. Okay. That testimony was where?</p> <p>21 A. The deposition was in -- in</p> <p>22 Canada in February.</p> <p>23 Q. Do you remember approximately</p> <p>24 when?</p>	<p>1 A. No. I'll be getting deposed on</p> <p>2 January 23rd in another patent dispute in San</p> <p>3 Francisco.</p> <p>4 Q. The name of that matter is what?</p> <p>5 A. The product is Niaspan. I'm</p> <p>6 working on behalf of the innovator company,</p> <p>7 AbbVie. It is also a patent dispute.</p> <p>8 Q. Any other testimony that you</p> <p>9 have provided?</p> <p>10 A. I don't think so.</p> <p>11 Q. Any trial testimony?</p> <p>12 A. Never been at trial.</p> <p>13 Q. Any of the matters in which you</p> <p>14 previously provided testimony, have they</p> <p>15 involved fragrance chemicals?</p> <p>16 A. No.</p> <p>17 Q. Have they involved any issues</p> <p>18 relating to fragrance chemicals?</p> <p>19 MS. O'DELL: Object to form.</p> <p>20 A. No.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Are you serving presently as an</p> <p>23 expert in any other matters?</p> <p>24 A. Yes.</p>
Page 47	Page 49
<p>1 A. I remember it was, like, minus</p> <p>2 70 degrees outside, and I can't tell you what</p> <p>3 year it was.</p> <p>4 Q. Can you estimate for us?</p> <p>5 A. I think it was somewhere around</p> <p>6 2011 or '12, perhaps.</p> <p>7 Q. That also was a patent dispute?</p> <p>8 A. Patent dispute, yeah.</p> <p>9 Q. The fourth case that you've</p> <p>10 rendered testimony in, was that a contract</p> <p>11 case?</p> <p>12 A. Yes.</p> <p>13 Q. When did you provide that</p> <p>14 testimony?</p> <p>15 A. 2010, I believe.</p> <p>16 Q. What was the matter name, if you</p> <p>17 remember?</p> <p>18 A. Michael Crowley v. PharmaForm</p> <p>19 and Akela.</p> <p>20 Q. That was a personal contract</p> <p>21 dispute that you had?</p> <p>22 A. Yeah.</p> <p>23 Q. Any other deposition testimony</p> <p>24 you have provided?</p>	<p>1 Q. How many?</p> <p>2 A. Well, I just told you about the</p> <p>3 Niaspan matter. I'm also working on -- it's</p> <p>4 called IPR, inter partes review, which is</p> <p>5 also a patent dispute, on behalf of Pfizer.</p> <p>6 The defendant is Intellipharmaceutics, and</p> <p>7 the product is called Evzio. It's a</p> <p>8 naloxone --</p> <p>9 Q. Any other expert matters?</p> <p>10 MS. O'DELL: Excuse me, sir.</p> <p>11 Were you finished?</p> <p>12 THE WITNESS: No.</p> <p>13 MS. O'DELL: Okay. You may</p> <p>14 finish your answer. I'm sorry.</p> <p>15 A. Yeah. The product is Evzio. I</p> <p>16 have been engaged on another matter. I have</p> <p>17 not yet agreed to take it.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. What matter is that?</p> <p>20 A. It's a pharmaceutical patent</p> <p>21 dispute. I don't know the name of the</p> <p>22 product. I've just looked at the patent, and</p> <p>23 I'm going to talk to the counsel that's</p> <p>24 engaged me to learn more to decide on whether</p>

13 (Pages 46 to 49)

Page 50	Page 52
<p>1 or not I think they have a position that I</p> <p>2 can support.</p> <p>3 Q. All of the expert witness work</p> <p>4 that you have done has related to patent</p> <p>5 disputes. Correct?</p> <p>6 A. That's correct.</p> <p>7 Q. None of the expert witness work</p> <p>8 that you have been engaged in other than this</p> <p>9 matter relates to or involves fragrance</p> <p>10 chemicals. Correct?</p> <p>11 MS. O'DELL: Object to form.</p> <p>12 A. I have not provided testimony</p> <p>13 regarding fragrance chemicals before.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Have you ever been retained in a</p> <p>16 case involving asbestos?</p> <p>17 A. No.</p> <p>18 Q. Have you ever been retained in a</p> <p>19 case involving cosmetic products?</p> <p>20 A. No.</p> <p>21 Q. Your curriculum vitae accurately</p> <p>22 describes your education background. Is that</p> <p>23 right?</p> <p>24 A. Yes.</p>	<p>1 flavor division -- actually, multiple flavor</p> <p>2 divisions, and I worked as a chemist there.</p> <p>3 Texas EnteroSorbents makes a</p> <p>4 clay product that is used in facial masks. I</p> <p>5 helped formulate that clay.</p> <p>6 Q. Any other involvement that</p> <p>7 you've had with any type -- well, strike</p> <p>8 that.</p> <p>9 Would you describe those</p> <p>10 chemicals as fragrance chemicals?</p> <p>11 A. I've used fragrance chemicals.</p> <p>12 Q. In terms of the work that you've</p> <p>13 just described for us?</p> <p>14 A. Well, there's no fragrance in</p> <p>15 the facial mask. Warner-Jenkinson made</p> <p>16 fragrances. I've used fragrances in</p> <p>17 pharmaceutical products.</p> <p>18 I've formulated a prenatal</p> <p>19 vitamin that we put ethyl vanillin in to add</p> <p>20 a scent -- an agreeable scent because the</p> <p>21 minerals present were unpleasant to pregnant</p> <p>22 moms. So I have experience working with</p> <p>23 fragrances and flavors.</p> <p>24 Q. The company was Warner- --</p>
Page 51	Page 53
<p>1 Q. You majored in chemistry at the</p> <p>2 University of Missouri. Correct?</p> <p>3 A. Yes.</p> <p>4 Q. You received a Master of Arts in</p> <p>5 organic chemistry at Washington University</p> <p>6 St. Louis in 1991. Is that right?</p> <p>7 A. Yes.</p> <p>8 Q. And a Ph.D. in molecular</p> <p>9 pharmaceuticals in 2003. Is that right?</p> <p>10 A. Yes.</p> <p>11 Q. Any other former -- strike that.</p> <p>12 Any additional formal education?</p> <p>13 A. No.</p> <p>14 Q. None of the companies that you</p> <p>15 currently work for or serve on the board of</p> <p>16 directors manufacture and produce cosmetic</p> <p>17 products. Is that right?</p> <p>18 A. No. I worked at Warner-</p> <p>19 Jenkinson. Warner-Jenkinson is now known as</p> <p>20 Sensient Technologies. Warner-Jenkinson is</p> <p>21 the world's largest manufacturer of</p> <p>22 colorants, that includes D&amp;C colorants used</p> <p>23 for cosmetics. Warner-Jenkinson is where the</p> <p>24 flavor for 7-Up was invented, and they have a</p>	<p>1 A. Yeah, Warner-Jenkinson. If you</p> <p>2 turn to Page 207, Warner-Jenkinson Company in</p> <p>3 St. Louis.</p> <p>4 Q. You worked at Warner-Jenkinson</p> <p>5 from January of 1992 to July of 1995. Is</p> <p>6 that right?</p> <p>7 A. Yes.</p> <p>8 Q. That was your first position</p> <p>9 after completing your education. Is that</p> <p>10 right?</p> <p>11 A. After I received my Master's</p> <p>12 degree.</p> <p>13 Q. Your position at Warner-</p> <p>14 Jenkinson was what?</p> <p>15 A. After I received my Master's</p> <p>16 degree, my position was chemist.</p> <p>17 Q. That was your experience with</p> <p>18 cosmetic products other than the facial mask</p> <p>19 that you described for us. Is that correct?</p> <p>20 MS. O'DELL: Object to form.</p> <p>21 A. That wasn't the only experience</p> <p>22 I had with cosmetic products.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. What other experience other</p>



Page 54	Page 56
<p>1 than -- and let me make sure that I</p> <p>2 understand. The facial product that you had</p> <p>3 some involvement with, where was that at?</p> <p>4 A. So Texas EnteroSorbents sells a</p> <p>5 natural product, clay. It's actually a</p> <p>6 silicate -- calcium aluminum silicate that's</p> <p>7 used in facial masks.</p> <p>8 Q. Okay. You serve on the board of</p> <p>9 directors at Texas EnteroSorbents. Is that</p> <p>10 right?</p> <p>11 A. Yes.</p> <p>12 Q. Have you ever been an employee</p> <p>13 for that company?</p> <p>14 A. No.</p> <p>15 Q. Have you ever been a consultant</p> <p>16 for that company?</p> <p>17 A. Yes.</p> <p>18 Q. And what was your contribution</p> <p>19 to the facial clay that they sell?</p> <p>20 A. An investor wanted to create</p> <p>21 products -- facial clay products and other</p> <p>22 cosmetics with the clay, and I connected him</p> <p>23 with subcontracting companies that could help</p> <p>24 facilitate the development of those and</p>	<p>1 Q. You have no formal training in</p> <p>2 toxicology?</p> <p>3 MS. O'DELL: Object to form.</p> <p>4 A. I took tox classes in grad</p> <p>5 school.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Other than that, you have no</p> <p>8 formal training. Correct?</p> <p>9 MS. O'DELL: Object to form.</p> <p>10 A. That sounds like training to me.</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. Other than what you testified</p> <p>13 to, you have no formal training in</p> <p>14 toxicology. Correct?</p> <p>15 A. I don't think that question is</p> <p>16 appropriate.</p> <p>17 Q. You don't understand that</p> <p>18 question?</p> <p>19 A. I would consider taking graduate</p> <p>20 level classes as formal training.</p> <p>21 Q. Other than the graduate level</p> <p>22 class or classes that you've described for</p> <p>23 us, have you had any other formal education</p> <p>24 in toxicology?</p>
Page 55	Page 57
<p>1 served as a technical consultant to the</p> <p>2 creation of compositions.</p> <p>3 Q. Is that a commercial product?</p> <p>4 A. It is.</p> <p>5 Q. The brand name is what?</p> <p>6 A. I don't know. They -- it's</p> <p>7 called Reavari (phonetic). I understand you</p> <p>8 can go buy the facial masks and Neiman Marcus</p> <p>9 and some other places. It's sold under</p> <p>10 multiple names, but I can't -- I couldn't</p> <p>11 tell you the name of the end user product.</p> <p>12 Q. What other experience other than</p> <p>13 what you've described for us have you had</p> <p>14 with cosmetic products?</p> <p>15 A. I think that's most of it.</p> <p>16 Q. You are not a medical</p> <p>17 toxicologist. Correct?</p> <p>18 A. That's correct.</p> <p>19 Q. You do not have a Ph.D. in</p> <p>20 toxicology. Correct?</p> <p>21 A. That's correct.</p> <p>22 Q. You do not hold yourself out as</p> <p>23 a toxicologist. Is that right?</p> <p>24 A. Yes.</p>	<p>1 A. Yes.</p> <p>2 Q. Tell us what that is.</p> <p>3 A. So I was a co-owner of a company</p> <p>4 called PharmaForm, and we worked with</p> <p>5 pharmaceuticals. We used a company called</p> <p>6 SafeBridge out of the Bay area, San</p> <p>7 Francisco, to evaluate the safety, toxicity,</p> <p>8 and pharmacology of new molecular entities</p> <p>9 prior to us bringing them in-house and</p> <p>10 working with them.</p> <p>11 So SafeBridge came in and did</p> <p>12 some industrial safety and toxicology</p> <p>13 training with our team, and we would engage</p> <p>14 them on each new drug substance prior to</p> <p>15 working on it.</p> <p>16 Q. You had a toxicologist come in</p> <p>17 and provide you and others with additional</p> <p>18 training. Is that right?</p> <p>19 A. Yes.</p> <p>20 Q. You are not a regulatory expert.</p> <p>21 Is that right?</p> <p>22 A. No.</p> <p>23 Q. You are not --</p> <p>24 A. Well, actually -- I mean, how do</p>

Michael Crowley, Ph.D.

Page 58	Page 60
<p>1 you want to define "expert"? I write 2 submissions to the FDA. 3 Q. Are you an expert in terms -- 4 well, strike that. 5 Do you consider yourself to be a 6 regulatory expert? 7 MS. O'DELL: Object to form. 8 A. I'm more than competent in 9 regulations. 10 BY MR. ZELLERS: 11 Q. Okay. 12 A. And my wife is a regulatory 13 affairs and quality assurance -- 14 Q. You're being deposed here today. 15 A. Yeah. 16 Q. My question is: Do you consider 17 yourself to be a regulatory expert? 18 A. I consider myself -- 19 MS. O'DELL: Objection -- excuse 20 me. 21 A. -- to be very competent in 22 understanding regulations. 23 MS. O'DELL: Let me just 24 insert -- object to the form of the</p>	<p>1 A. No. 2 Q. For what company? 3 A. Pain Therapeutics. They're a 4 consulting client. They're not on my CV. 5 Q. What product were you testifying 6 to before the FDA on? 7 A. It's a new form of oxycodone. 8 Q. Was the company attempting to 9 obtain regulatory approval? 10 A. Yes. 11 Q. What hearing or type of 12 proceeding was this before the FDA? 13 A. It was an FDA advisory committee 14 meeting. 15 Q. You presented on behalf of your 16 client at the FDA advisory committee meeting. 17 Is that right? 18 A. That's correct. 19 Q. Do you believe that qualifies 20 you as a regulatory expert? 21 A. I have said this, I think, three 22 times now, Counselor. I am more than 23 competent in understanding regulations. 24 Q. You are not an expert in the FDA</p>
Page 59	Page 61
<p>1 question. Sorry. Excuse me. Give me 2 just a second to get that in there. 3 BY MR. ZELLERS: 4 Q. Is that a "yes" or is that a 5 "no"? 6 A. I think I answered your 7 question, Counselor. 8 Q. Do you consider yourself to be a 9 regulatory expert, yes or no? 10 A. I'm more than competent in 11 understanding regulations. 12 Q. I understand you consider 13 yourself competent to understand regulations. 14 Has anybody come to you and asked you to 15 serve as a regulatory expert in any legal 16 matter? 17 A. Not in any legal matter, but in 18 June of this year I was presenting to the 19 FDA. 20 Q. What did you present to the FDA 21 on in June? 22 A. A new drug application. 23 Q. And this was a new drug 24 application for your company?</p>	<p>1 regulatory process for cosmetic products. 2 Correct? 3 MS. O'DELL: Object to form. 4 A. The FDA has very limited 5 cosmetic regulations. 6 BY MR. ZELLERS: 7 Q. I need you to answer my question 8 as best you can. 9 You are not an expert in the FDA 10 regulatory process for cosmetic products. Is 11 that correct? 12 MS. O'DELL: Object to form. 13 You may answer. 14 A. I've read them, and I understand 15 them, and I expect to opine on them today, 16 so -- 17 BY MR. ZELLERS: 18 Q. That is the extent of your 19 expertise with respect to the FDA regulatory 20 process for cosmetic products. Correct? 21 MS. O'DELL: Object to form. 22 A. I've certainly applied them in 23 creating cosmetic products, Counselor. 24</p>

16 (Pages 58 to 61)

Page 62	Page 64
<p>1 BY MR. ZELLERS: 2 Q. Anything else? 3 A. Anything else with regard to? 4 Q. Yes. FDA regulatory expertise 5 with cosmetic products. 6 MS. O'DELL: Object to form. 7 A. I don't understand your 8 question. 9 BY MR. ZELLERS: 10 Q. You're not a medical doctor. 11 Correct? 12 A. No. 13 Q. You don't treat patients? 14 A. No. 15 Q. You are not a pathologist? 16 A. No. 17 Q. You have no formal training or 18 education in pathology. Correct? 19 A. That's correct. 20 Q. You've never done a pathological 21 exam. Correct? 22 A. No. 23 Q. And you have never authored a 24 pathology report involving ovarian cancer.</p>	<p>1 than the book that we marked as Deposition 2 Exhibit 5? 3 A. Flavors and Flavonoids was a 4 book that I recall looking at several years 5 ago. Generally, you know, you pick up the 6 phone, and you call International Flavors &amp; 7 Fragrances or any number of fragrance houses. 8 Also there are some consultants that we would 9 engage. We developed oral compositions that 10 we would do e-tongue studies with to 11 understand taste profiles of new drugs and if 12 flavors or sweeteners were required to help 13 with palatability. I've done work with 14 pediatric compositions, and those are often 15 flavored. 16 Q. What experts or consultants 17 would you go to if you had questions about 18 fragrance chemicals? 19 A. There's a guy named David Tze. 20 I can't remember his company, but they're 21 well-known for, you know, using e-tongue and 22 flavoring assistance with compositions. 23 Q. Anyone else or any other 24 companies or groups?</p>
Page 63	Page 65
<p>1 Is that right? 2 A. That's correct. 3 Q. Have you ever worked with a 4 cosmetic product that is applied in the 5 peroneal region? 6 A. No. 7 Q. Before being contacted by 8 Ms. Thompson and the attorneys for plaintiffs 9 in the talc MDL litigation, did you keep up 10 to date on the topic of fragrance chemicals 11 by reviewing peer-reviewed literature? 12 A. When I needed to. I mean, at 13 various times I would reach out and see what 14 I needed to know about certain fragrances. 15 Q. Would you do that on a routine 16 basis, or would you do that in connection 17 with a particular project or assignment? 18 A. In a particular -- in connection 19 with a project. 20 Q. What journals would you review 21 to try to educate yourself on the topic of 22 fragrance chemicals? 23 A. I looked at books. 24 Q. What books did you review other</p>	<p>1 A. I mean, we contacted a number of 2 different flavor companies that have got 3 excellent technical service to help identify, 4 you know, flavors and products available. 5 Q. You have never written or 6 published on the topic of fragrance 7 chemicals. Is that right? 8 A. That's correct. 9 Q. You have never written or 10 published on the topic of talcum powder. 11 Correct? 12 A. No. 13 Q. What writings or publications 14 have -- do you have with respect to talcum 15 powder? 16 A. Well, I've formulated products 17 that are approved by the FDA that have talcum 18 powder in it. 19 Q. What products? 20 A. I would have to -- well, Thiola. 21 It dissolves kidney stones. It's a film 22 coating. We put talc in the film coating. 23 Q. Is that a marketed product? 24 A. Yes, it's commercially</p>

Page 66	Page 68
<p>1 available.</p> <p>2 Q. Who is the manufacturer of</p> <p>3 Thiola?</p> <p>4 A. Mission Pharmacal in San</p> <p>5 Antonio.</p> <p>6 Q. When -- strike that.</p> <p>7 What was your involvement with</p> <p>8 that product?</p> <p>9 A. I was the formulator.</p> <p>10 Q. When were you involved with the</p> <p>11 formulation of Thiola?</p> <p>12 A. That would have been sometime</p> <p>13 between 1995 and 2000.</p> <p>14 Q. What company were you with at</p> <p>15 the time?</p> <p>16 A. Mission Pharmacal, the owner of</p> <p>17 the product.</p> <p>18 Q. My question to you, though, was:</p> <p>19 Have you ever written or published on talcum</p> <p>20 powder or any issues relating to talcum</p> <p>21 powder?</p> <p>22 A. I have -- I'm almost certain</p> <p>23 that some of my patents disclose the use of</p> <p>24 talcum powder, but I have not authored any</p>	<p>1 before getting involved in this litigation.</p> <p>2 Correct?</p> <p>3 A. That's correct.</p> <p>4 Q. You -- strike that.</p> <p>5 Have you ever -- other than your</p> <p>6 involvement with Thiola and helping Mission</p> <p>7 Pharmacal back in 1995 to January of 2000</p> <p>8 with respect to this product Thiola, you've</p> <p>9 had no communications with the FDA regarding</p> <p>10 talcum powder. Correct?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A. I don't believe I've ever had a</p> <p>13 communication with the FDA about talcum</p> <p>14 powder. I mean, I've met with FDA on</p> <p>15 multiple occasions, and I have worked on</p> <p>16 products that have talcum powder in it, but I</p> <p>17 don't believe that -- I've certainly never</p> <p>18 had a discussion with the FDA about any of</p> <p>19 the issues with respect to talcum powder</p> <p>20 safety.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Or anything else other than</p> <p>23 perhaps in connection with Thiola back in</p> <p>24 1995 to 2000?</p>
Page 67	Page 69
<p>1 papers specific to, you know, concerns with</p> <p>2 asbestos and ovarian cancer and so forth,</p> <p>3 so --</p> <p>4 Q. Or inflammation or irritation.</p> <p>5 Correct?</p> <p>6 MS. O'DELL: Object to form.</p> <p>7 A. I haven't -- I haven't published</p> <p>8 on that with respect to talcum powder, no.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. You also have not, with respect</p> <p>11 to all of those subjects, done any</p> <p>12 independent research. Fair?</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 A. I have reviewed the literature.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. Other than going out and</p> <p>17 reviewing articles or reviewing textbooks,</p> <p>18 you have not done any independent research</p> <p>19 with respect to fragrance chemicals, cancer,</p> <p>20 asbestos, inflammation?</p> <p>21 A. No, I have not.</p> <p>22 Q. You have -- strike that.</p> <p>23 You had formulated no opinions</p> <p>24 regarding the ingredients in talcum powder</p>	<p>1 MS. O'DELL: Excuse me. Object</p> <p>2 to form.</p> <p>3 A. I don't believe so.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. What product have you been</p> <p>6 involved in that contains talcum powder other</p> <p>7 than Thiola?</p> <p>8 A. Warner-Jenkinson made film</p> <p>9 coatings -- it's called SpectraBlend and</p> <p>10 SpectraSpray, and talc was a component of</p> <p>11 those products.</p> <p>12 Q. Were you --</p> <p>13 A. Talc was also used in their</p> <p>14 cosmetics.</p> <p>15 Q. Were you personally involved in</p> <p>16 any products involving talcum powder at</p> <p>17 Warner-Jenkinson?</p> <p>18 A. Yes.</p> <p>19 Q. What products -- or strike that.</p> <p>20 In what way were you personally</p> <p>21 involved with talcum powder?</p> <p>22 A. Just SpectraBlend and</p> <p>23 SpectraSpray had talcum powder in it.</p> <p>24 Q. What was your involvement in</p>

Page 70	Page 72
<p>1 that?</p> <p>2 A. I was providing technical</p> <p>3 service, product development support for</p> <p>4 those two products.</p> <p>5 Q. Did those products ever become</p> <p>6 marketed?</p> <p>7 A. Well, I don't know how to answer</p> <p>8 your question. So those would be used by</p> <p>9 Warner-Jenkinson's customers in their</p> <p>10 products that were marketed. So, for</p> <p>11 example, we worked with, you know, McNeil on</p> <p>12 the Tylenol gel caps. SpectraBlend and</p> <p>13 SpectraSpray were used as part of those</p> <p>14 products. We worked on Tylenol PM, which</p> <p>15 are --</p> <p>16 Q. You would sell to folks who</p> <p>17 would use the --</p> <p>18 A. Spectra --</p> <p>19 Q. -- Warner-Jenkinson product in</p> <p>20 their product?</p> <p>21 A. Yeah, that's correct.</p> <p>22 Q. Any other talcum powder</p> <p>23 experience other than what you've told me?</p> <p>24 A. I mean, it's been used in a</p>	<p>1 MR. ZELLERS: Mr. Court</p> <p>2 Reporter, you speak up as well if you</p> <p>3 need to take a break.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. Are we good?</p> <p>6 A. Let's go another ten minutes and</p> <p>7 take a break at 10:30. Does that sound</p> <p>8 reasonable?</p> <p>9 Q. Yes, although I've got a topic</p> <p>10 here that I want to finish.</p> <p>11 A. Okay.</p> <p>12 Q. So it may take me 15 minutes or</p> <p>13 20 minutes.</p> <p>14 A. That's okay.</p> <p>15 Q. But let me just finish this</p> <p>16 topic, and then --</p> <p>17 MS. WUNDERLICH: Can I just ask</p> <p>18 that you keep your voice up. I can't</p> <p>19 hear you very well down here,</p> <p>20 especially with a lot of noise from</p> <p>21 outside.</p> <p>22 MS. O'DELL: Are you referring</p> <p>23 to the witness or --</p> <p>24 MS. WUNDERLICH: The witness,</p>
Page 71	Page 73
<p>1 number -- I mean, it's been used as a glider</p> <p>2 for making tablets and filling capsules and</p> <p>3 so forth. I feel confident we used it at</p> <p>4 PharmaForm, too.</p> <p>5 So, I mean, it's -- it's</p> <p>6 something I've used at multiple points during</p> <p>7 my 20-plus years experience.</p> <p>8 Q. Have you ever been involved in a</p> <p>9 safety or risk assessment analysis of talcum</p> <p>10 powder other than in this case?</p> <p>11 A. No.</p> <p>12 Q. Have you ever communicated with</p> <p>13 the FDA regarding any issues relating to</p> <p>14 ovarian cancer?</p> <p>15 A. No.</p> <p>16 Q. Any communications with Health</p> <p>17 Canada regarding talcum powder?</p> <p>18 A. No.</p> <p>19 Q. Any communications with Health</p> <p>20 Canada regarding ovarian cancer?</p> <p>21 A. No.</p> <p>22 Q. I did not tell you this in the</p> <p>23 beginning, but anytime you or any counsel</p> <p>24 need to take a break, speak up.</p>	<p>1 yes.</p> <p>2 THE WITNESS: If you can't hear</p> <p>3 me, just give me a cue, and I'll try to</p> <p>4 repeat. Are you able to hear me okay?</p> <p>5 Can you hear me okay?</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Were you under any time pressure</p> <p>8 in terms of analyzing the issues that you</p> <p>9 were asked to analyze in this case by</p> <p>10 plaintiffs in developing your opinions and</p> <p>11 preparing your report?</p> <p>12 MS. O'DELL: Object to form.</p> <p>13 A. I wish I would have had more</p> <p>14 time. There was an awful lot of stuff to</p> <p>15 review. There was approximately 175</p> <p>16 fragrance chemicals between the two of them,</p> <p>17 and I tried to review as much of the</p> <p>18 available information as I could find.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. Do you have an estimate as to</p> <p>21 the amount -- total amount of time that</p> <p>22 you've spent on this matter?</p> <p>23 A. No. I'd have to look at those</p> <p>24 invoices and sum it all up, which I have not</p>



Michael Crowley, Ph.D.

Page 74	Page 76
<p>1 done.</p> <p>2 Q. Would you have spent more time</p> <p>3 if you had more time in terms of doing</p> <p>4 research and reviewing matters to prepare</p> <p>5 your opinions in this matter?</p> <p>6 A. Yeah. I mean, I -- I would have</p> <p>7 liked a little bit more time, but I'm</p> <p>8 comfortable with the opinions.</p> <p>9 Q. Did plaintiffs' counsel provide</p> <p>10 you with any of the articles or data or</p> <p>11 documents that you referenced in your report?</p> <p>12 A. Yes. So I -- you know, I did</p> <p>13 all the primary literature searching and</p> <p>14 searched the databases and so forth. The</p> <p>15 documents in the sources relied upon list</p> <p>16 that -- that are from the case -- you know,</p> <p>17 I-M-E-R-Y -- the Imerys documents and the J&amp;J</p> <p>18 numbered documents, those were produced by</p> <p>19 counsel. But everything else I found on my</p> <p>20 own.</p> <p>21 Q. If we look, then, at your</p> <p>22 report, which includes Deposition Exhibits 9</p> <p>23 and 10, your reference list and your sources</p> <p>24 considered list, the only documents and</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. Is that correct --</p> <p>3 A. Yes.</p> <p>4 Q. -- Dr. Crowley?</p> <p>5 A. Yeah.</p> <p>6 Q. Any other articles, data,</p> <p>7 documents, or materials that were provided to</p> <p>8 you by plaintiffs' counsel in connection with</p> <p>9 your review of this matter?</p> <p>10 A. They may have emailed me some</p> <p>11 information along the way, but to the best of</p> <p>12 my recollection, that's the key pieces.</p> <p>13 Q. If they emailed you any articles</p> <p>14 or data or documents, would you have included</p> <p>15 those in your sources considered list?</p> <p>16 A. I think so. I mean, at one</p> <p>17 point I received an email that pointed to the</p> <p>18 J&amp;J website in which, you know, the quality</p> <p>19 and purity of the ingredients and the quality</p> <p>20 process at J&amp;J was disclosed, but I don't</p> <p>21 think that's in my sources considered list.</p> <p>22 Q. Anything else that -- strike</p> <p>23 that.</p> <p>24 Any other source that you</p>
Page 75	Page 77
<p>1 materials that were provided to you by</p> <p>2 plaintiffs' counsel were the Johnson &amp;</p> <p>3 Johnson documents and the Imerys documents.</p> <p>4 Correct?</p> <p>5 A. I believe so. Well, they gave</p> <p>6 me the Thomas Dydek report. And I think at</p> <p>7 one point I was given the Canadian Ministry</p> <p>8 of Health or Health Ministry review of talcum</p> <p>9 powder. And --</p> <p>10 Q. Anything else?</p> <p>11 A. I think that is everything.</p> <p>12 MS. O'DELL: Just for the</p> <p>13 record, I would add the supplemental</p> <p>14 answers to plaintiffs' second set of</p> <p>15 interrogatories from the Ingram case</p> <p>16 were also litigation materials that</p> <p>17 were provided to Dr. Crowley, and those</p> <p>18 are the list of fragrance chemicals.</p> <p>19 THE REPORTER: I'm sorry. The</p> <p>20 list of what?</p> <p>21 MS. O'DELL: Fragrance</p> <p>22 chemicals.</p> <p>23 A. Yeah.</p> <p>24</p>	<p>1 considered in preparing your report in this</p> <p>2 matter that is not identified in either the</p> <p>3 reference list, the body of the report, or</p> <p>4 your sources considered?</p> <p>5 A. I think I may have looked at a</p> <p>6 toxicology book or two just to refresh myself</p> <p>7 on some of those things. These are textbooks</p> <p>8 that I had from graduate school.</p> <p>9 I probably looked at -- you</p> <p>10 know, refreshed myself on a few items, but</p> <p>11 I -- as I've said previously, I believe I</p> <p>12 made every effort to disclose everything that</p> <p>13 I considered and relied upon.</p> <p>14 Q. What toxicology books did you</p> <p>15 look at to refresh your recollection on those</p> <p>16 issues?</p> <p>17 A. They're sitting on my bookshelf</p> <p>18 at home. I'd have to go look. I can't even</p> <p>19 remember who the authors are right now.</p> <p>20 Q. Anything else that you reviewed</p> <p>21 or considered other than what's contained in</p> <p>22 your report, the reference list, and the</p> <p>23 sources considered list?</p> <p>24 MS. O'DELL: Object to the form.</p>

20 (Pages 74 to 77)

<p style="text-align: right;">Page 78</p> <p>1 In addition to --</p> <p>2 MR. ZELLERS: In addition to his</p> <p>3 testimony.</p> <p>4 MS. O'DELL: His testimony and</p> <p>5 the appendices?</p> <p>6 MR. ZELLERS: Yes. And he told</p> <p>7 me early on that he considers the</p> <p>8 appendices to be part of his report.</p> <p>9 MS. O'DELL: Fair enough. I</p> <p>10 just wanted to make that clear.</p> <p>11 A. As I said, I've made every</p> <p>12 effort to, you know, make sure that the stuff</p> <p>13 I relied upon is in that list and/or cited.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Did you --</p> <p>16 A. I don't believe there's anything</p> <p>17 that I've missed.</p> <p>18 Q. Did you -- are you finished?</p> <p>19 A. Yeah.</p> <p>20 Q. Did you review any expert</p> <p>21 reports from any other plaintiff expert in</p> <p>22 the talc MDL?</p> <p>23 A. After I submitted my report,</p> <p>24 they were circulated -- some of the other</p>	<p style="text-align: right;">Page 80</p> <p>1 A. No.</p> <p>2 Q. Did you review Dr. Plunkett's</p> <p>3 deposition transcript, which was taken in</p> <p>4 December of 2018.</p> <p>5 A. Yesterday they read --</p> <p>6 Ms. O'Dell --</p> <p>7 MS. O'DELL: Don't --</p> <p>8 THE WITNESS: That's privileged?</p> <p>9 MS. O'DELL: That's privileged.</p> <p>10 Don't disclose anything that we've</p> <p>11 discussed.</p> <p>12 THE WITNESS: Okay.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. My question is: Have you</p> <p>15 reviewed Dr. Plunkett's deposition</p> <p>16 transcript?</p> <p>17 A. No.</p> <p>18 Q. Do you have a general</p> <p>19 understanding of who Dr. Plunkett is?</p> <p>20 A. No.</p> <p>21 Q. Do you have a general</p> <p>22 understanding of her opinions in this matter?</p> <p>23 A. No.</p> <p>24 Q. You were asked to make certain</p>
<p style="text-align: right;">Page 79</p> <p>1 experts were circulated. I -- to say</p> <p>2 "review" would be an overstatement. I think</p> <p>3 I looked at title pages to see what people</p> <p>4 opined on.</p> <p>5 I think there was one report</p> <p>6 that I even kind of flipped through the whole</p> <p>7 thing. Most of mine I did not read anything</p> <p>8 other than the title page.</p> <p>9 Q. What expert report did you at</p> <p>10 least flip through?</p> <p>11 A. I don't remember the name of the</p> <p>12 expert, but he was opining on detection</p> <p>13 methods and testing methods.</p> <p>14 Q. Any other expert reports that</p> <p>15 you reviewed relating to the talcum powder</p> <p>16 issues?</p> <p>17 A. No, I don't think so.</p> <p>18 Q. Did you review any expert</p> <p>19 reports other than Dr. Dydek's report from</p> <p>20 any of the other talcum powder cases?</p> <p>21 A. No.</p> <p>22 Q. Have you reviewed any deposition</p> <p>23 or trial transcripts from any of the talcum</p> <p>24 powder cases?</p>	<p style="text-align: right;">Page 81</p> <p>1 assumptions in forming your opinions. Is</p> <p>2 that right?</p> <p>3 A. Yes.</p> <p>4 Q. On Page 11 of your report -- and</p> <p>5 feel free to refer to it if you need to --</p> <p>6 you were asked to assume that talcum powder</p> <p>7 can migrate from the perineum to the upper</p> <p>8 genital tract. Is that right?</p> <p>9 A. Yes.</p> <p>10 Q. Your opinion that fragrance</p> <p>11 chemicals contribute to the inflammatory</p> <p>12 properties, toxicity, or potential</p> <p>13 carcinogenicity of the products is dependent</p> <p>14 on plaintiffs' ability to prove that talcum</p> <p>15 powder can migrate from the vagina to the</p> <p>16 upper genital tract. Correct?</p> <p>17 MS. O'DELL: Object to form.</p> <p>18 A. No, not necessarily. A number</p> <p>19 of these fragrance chemicals are absorbed</p> <p>20 through skin, and several of them are</p> <p>21 permeation enhancers, which means that they</p> <p>22 will actually help promote other things from</p> <p>23 being absorbed, metabolized, distributed, and</p> <p>24 eliminated. So, regardless of whether that</p>



Page 82	Page 84
<p>1 assumption holds or not, it doesn't affect my 2 opinion. 3 BY MR. ZELLERS: 4 Q. Is it your testimony that a skin 5 irritant can produce or increase the risk for 6 ovarian cancer? 7 MS. O'DELL: Object to the form. 8 A. It's certainly possible, yeah. 9 BY MR. ZELLERS: 10 Q. Explain how a skin irritant can 11 be associated with an increased risk of 12 ovarian cancer? 13 A. An irritation produces an 14 inflammatory response. 15 Q. It produces an inflammatory 16 response in the area of the irritation. Is 17 that right? 18 A. Yes. But also, I mean, those 19 inflammatory chemicals travel throughout the 20 human body. So increased levels of 21 inflammation have been associated with a 22 higher risk of cancers. 23 Q. Skin irritation, has it been 24 associated with an increased risk of ovarian</p>	<p>1 A. Just report the facts and rely 2 upon the facts to form the basis of the 3 opinion. There's no bias here, Counselor. 4 Q. Was there any additional 5 information that you need to fully and fairly 6 evaluate the questions that are set forth in 7 your report? 8 A. I don't believe so. I did my 9 best to examine the totality of the evidence. 10 Q. Do you agree that if you did not 11 have all the information, that your opinions 12 could be biased? 13 MS. O'DELL: Object to form. 14 A. I don't believe that they are. 15 BY MR. ZELLERS: 16 Q. If you didn't have all the 17 relevant information, could your opinions be 18 unfounded or incomplete? 19 MS. O'DELL: Object to -- 20 A. I -- 21 MS. O'DELL: Excuse me. Object 22 to the form. 23 A. I'm very comfortable that I 24 examined and used generally accepted</p>
Page 83	Page 85
<p>1 cancer? 2 A. Skin irritation? 3 Q. Yes. 4 A. I wasn't asked to opine -- 5 Q. Inflammation of the skin, has 6 that been associated with an increased risk 7 of ovarian cancer? 8 MS. O'DELL: Object to form. 9 A. I wasn't asked to offer that 10 opinion. 11 BY MR. ZELLERS: 12 Q. And you're not offering those 13 opinions. Correct? 14 A. That's correct. 15 Q. Any other assumptions that 16 you're making in forming your opinions here 17 today? 18 A. No. 19 Q. In reaching your opinions, would 20 you agree it's important for you to address 21 the questions asked and review the data in a 22 fair and impartial way? 23 A. Yes. 24 Q. Why is that important?</p>	<p>1 practices to gather the information and then 2 form opinions upon which that evidence is 3 based. 4 BY MR. ZELLERS: 5 Q. I -- 6 A. So there is no biased -- bias 7 associated with understanding facts. 8 Q. Do you agree that scientists and 9 experts in litigation should be ethical and 10 honest? 11 A. Yes. 12 Q. You reference sources from the 13 EPA in your report. Is that right? 14 A. Yes. 15 Q. Is the EPA a reputable 16 organization? 17 MS. O'DELL: Object to the form. 18 It's a governmental organization, but 19 go on. 20 A. I have no issue with the EPA. I 21 find them to be reputable. 22 (Exhibit No. 11 marked) 23 BY MR. ZELLERS: 24 Q. Deposition Exhibit 11 --</p>

Michael Crowley, Ph.D.

Page 86	Page 88
<p>1 MS. O'DELL: Thank you.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. -- is from the EPA website, and</p> <p>4 it sets forth the standards for scientific</p> <p>5 integrity. Is that right?</p> <p>6 MS. O'DELL: &amp;Object to the</p> <p>7 form.</p> <p>8 A. That's what it looks like.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. Do you see that the EPA explains</p> <p>11 that scientific integrity is highly important</p> <p>12 to insulate the scientific community from</p> <p>13 things such as bias, falsification, and</p> <p>14 plagiarism?</p> <p>15 MS. O'DELL: What page are you</p> <p>16 reading from?</p> <p>17 MR. ZELLERS: Page 2.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. I'm looking at the middle of the</p> <p>20 page. "Scientific integrity is important</p> <p>21 because it provides insulation from</p> <p>22 plagiarism" -- correct?</p> <p>23 A. That's what it says, yeah.</p> <p>24 Q. It also provides insulation from</p>	<p>1 A. Held accountable for what?</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. You have no issue that you, as</p> <p>4 an expert, need to be free from bias,</p> <p>5 falsification, and plagiarism in your review</p> <p>6 analysis and preparation of your report in</p> <p>7 this matter. Correct?</p> <p>8 MS. O'DELL: Object to the form.</p> <p>9 A. I think you're asking me, you</p> <p>10 know, if I maintain scientific integrity. Is</p> <p>11 that right? If that's your question, the</p> <p>12 answer is yes.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. And the EPA, which you cite and</p> <p>15 rely on, cites standards for scientific</p> <p>16 integrity. Correct?</p> <p>17 A. Yeah.</p> <p>18 Q. And those standards state that</p> <p>19 scientific integrity is important because it</p> <p>20 provides insulation from bias, falsification,</p> <p>21 and plagiarism. Correct?</p> <p>22 A. That's what it says.</p> <p>23 Q. You agree with that?</p> <p>24 A. Yeah.</p>
Page 87	Page 89
<p>1 research misconduct. Is that right?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 I don't see where it says "misconduct"</p> <p>4 on the document. I may be --</p> <p>5 MR. ZELLERS: Sure.</p> <p>6 MS. O'DELL: I may be missing</p> <p>7 it.</p> <p>8 MR. ZELLERS: Okay. And,</p> <p>9 actually, I'd rather the witness ask me</p> <p>10 questions, but I'll try to help you</p> <p>11 here.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. "Why is scientific integrity</p> <p>14 important?"</p> <p>15 The second bullet point says,</p> <p>16 "Scientific integrity, along with federal</p> <p>17 policies on research misconduct" -- it gets</p> <p>18 to the point where scientists such as</p> <p>19 yourself can be held accountable. Do you</p> <p>20 agree?</p> <p>21 MS. O'DELL: Excuse me. Object</p> <p>22 to the form, misstates the document.</p> <p>23 You can answer if you understand the</p> <p>24 question.</p>	<p>1 Q. Correct?</p> <p>2 A. Yeah.</p> <p>3 Q. All right. Are you familiar</p> <p>4 with the Office of Research Integrity? And</p> <p>5 let me hand you a page from their website</p> <p>6 that we'll mark as Exhibit 12.</p> <p>7 (Exhibit No. 12 marked)</p> <p>8 A. No, I am not.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. You've never heard of the Office</p> <p>11 of Research Integrity?</p> <p>12 A. No, I haven't.</p> <p>13 Q. Are you aware that the federal</p> <p>14 government has an Office of Research</p> <p>15 Integrity?</p> <p>16 A. No.</p> <p>17 Q. Do you see from Deposition</p> <p>18 Exhibit 12 that plagiarism is defined as the</p> <p>19 appropriation of another person's ideas,</p> <p>20 processes, results, or words without giving</p> <p>21 appropriate credit?</p> <p>22 A. Yes.</p> <p>23 Q. Do you agree with that</p> <p>24 definition of plagiarism?</p>

23 (Pages 86 to 89)

<p style="text-align: right;">Page 90</p> <p>1 A. It seems like a reasonable 2 definition of plagiarism. 3 Q. Are you aware that several 4 paragraphs from your report were copied and 5 pasted from various websites and articles? 6 A. Yes. 7 Q. Can you tell us where in your 8 report you copied and pasted statements from 9 other websites and articles? 10 A. I mean, a good majority of the 11 report was drawn from those sources. 12 Q. It would be wrong for you to 13 simply lift or copy and paste the text from 14 other sources and include it in your report 15 without giving attribution to those sources. 16 Correct? 17 MS. O'DELL: Object to form. 18 A. I did every -- I made every 19 effort to cite where I drew information from. 20 And, Counselor, if you're going to suggest 21 that copying and pasting information into 22 that report, specifically in the appendices, 23 represents plagiarism, that was a collation 24 of the information from which I formed the</p>	<p style="text-align: right;">Page 92</p> <p>1 different. I'm not talking about 2 paraphrasing. I'm not talking about where 3 you do cite to a source. 4 It would be wrong for you as an 5 expert witness in this case to lift, word for 6 word, text from other articles and other 7 sources and include those in your report. 8 Correct? 9 A. I did not -- 10 MS. O'DELL: Excuse me. Object 11 to the form. 12 A. No. I disagree. 13 BY MR. ZELLERS: 14 Q. It would be appropriate for -- 15 MS. O'DELL: Excuse me, sir. 16 MR. ZELLERS: Sure. 17 MS. O'DELL: If you're not 18 finished, you may finish your answer. 19 A. I wasn't finished. I had to 20 gather information on these chemicals, and I 21 relied upon several sources to do so. The 22 appendices were created by examining those 23 sources, collating that information, which 24 included copying and pasting it in the</p>
<p style="text-align: right;">Page 91</p> <p>1 basis of that report and the opinion. 2 BY MR. ZELLERS: 3 Q. Would it be wrong, in the body 4 of your report, not speaking of the 5 appendices, for you to copy and paste 6 statements from other authors and websites 7 and materials without giving attribution to 8 those sources? 9 MS. O'DELL: Object to the form. 10 A. I don't think so. 11 BY MR. ZELLERS: 12 Q. You think it would be 13 permissible to take quotes from other 14 articles, websites, and sources, include them 15 in the body of your report, and pretend that 16 they are your words? 17 MS. O'DELL: Object to the form. 18 A. I don't believe I did that. I 19 believe that what I did was either paraphrase 20 or cite to a source. And if I have missed a 21 citation, then, you know, it's easily 22 corrected. 23 BY MR. ZELLERS: 24 Q. My question is a little</p>	<p style="text-align: right;">Page 93</p> <p>1 report. So, no, it's absolutely not 2 inappropriate to do so. 3 BY MR. ZELLERS: 4 Q. I am not speaking of the 5 appendices. I'm speaking of the body of your 6 report where you set forth your opinions. 7 It would be wrong in the body of 8 your report to lift and copy and paste text 9 from other articles or from other sources 10 without giving attribution to those sources. 11 Correct? 12 MS. O'DELL: Object to the form. 13 A. No, I don't believe so. I don't 14 believe I did that. I believe that in some 15 of the tables I recite some of the items from 16 the appendices word for word. So -- 17 MS. O'DELL: Excuse me. Let 18 him -- you may finish. 19 A. Yeah. So let's be very clear 20 about this, Counselor. If you're going to 21 suggest that my report is anything less than 22 ethical and that there's plagiarism or this 23 or that, I was relying upon that information 24 to draw, you know, the conclusions and the</p>

Page 94	Page 96
<p>1 opinions that I drew.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. So I understand your testimony,</p> <p>4 you do not believe that it is wrong for you</p> <p>5 to take, word for word, information --</p> <p>6 A. Why don't you show me where that</p> <p>7 is.</p> <p>8 MS. O'DELL: Excuse me. Let him</p> <p>9 finish.</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. Let me finish my question.</p> <p>12 MS. O'DELL: And then let me</p> <p>13 object. So you can finish your --</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Would it be wrong for you, in</p> <p>16 the body of your report, to go to other</p> <p>17 articles or other sources and lift that</p> <p>18 information word for word and include it in</p> <p>19 your report without attribution to other</p> <p>20 sources? Would that be wrong?</p> <p>21 MS. O'DELL: Object to the form,</p> <p>22 asked and answered, misstates his prior</p> <p>23 testimony. You may answer the question</p> <p>24 as you understand it.</p>	<p>1 entire paragraph -- second paragraph under</p> <p>2 Section 4.2 on Page 18 -- is copied and</p> <p>3 pasted word for word from an article written</p> <p>4 by Anne Steinemann and published in</p> <p>5 Environmental Impact Assessment Review, 2008?</p> <p>6 A. I may have reviewed that and</p> <p>7 gotten it from there and, you know, didn't do</p> <p>8 an adequate job of paraphrasing. May I see</p> <p>9 the article, please?</p> <p>10 Q. Sure. Because it's your</p> <p>11 testimony it would be okay if you paraphrased</p> <p>12 statements from Ms. Steinemann in her paper.</p> <p>13 Is that right?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. Yes.</p> <p>16 (Exhibit No. 13 marked)</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. I'm going to hand you what we'll</p> <p>19 mark as Deposition Exhibit 13.</p> <p>20 A. Okay.</p> <p>21 Q. Which is the Steinemann article.</p> <p>22 Your first sentence of this paragraph starts</p> <p>23 with, "Regulation of consumer products</p> <p>24 largely falls under the Consumer Products</p>
Page 95	Page 97
<p>1 A. Yeah. I don't believe I did it.</p> <p>2 If I did, it was an oversight. Okay? And</p> <p>3 I'll state again --</p> <p>4 MS. O'DELL: There's no --</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. Turn to --</p> <p>7 MS. O'DELL: There's no question</p> <p>8 pending.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. Turn to Page 18 of your report.</p> <p>11 Do you see Page 18?</p> <p>12 A. Yes.</p> <p>13 Q. Paragraph 2. Are those your</p> <p>14 words? And I'm sorry. So it's clear,</p> <p>15 Paragraph 2 underneath Section 4.2, fragrance</p> <p>16 chemical regulatory review.</p> <p>17 MS. O'DELL: Just so I'm clear,</p> <p>18 the paragraph beginning "Regulation of</p> <p>19 consumer products"?</p> <p>20 MR. ZELLERS: Yes.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Are those your words?</p> <p>23 A. I believe I typed them, yeah.</p> <p>24 Q. Are you aware that nearly that</p>	<p>1 Safety Act."</p> <p>2 Is that right?</p> <p>3 A. Yes.</p> <p>4 Q. Go to Page 2 of the Steinemann</p> <p>5 article underneath the regulatory analyses,</p> <p>6 the third paragraph, second sentence,</p> <p>7 "Regulation of consumer products largely</p> <p>8 falls under the Consumer Products Safety</p> <p>9 Act," and I eliminated the statement in</p> <p>10 parens.</p> <p>11 That's word for word. Correct?</p> <p>12 A. No, it's not.</p> <p>13 Q. What -- other than the omitted</p> <p>14 paren which states "other than food, drugs</p> <p>15 cosmetics, tobacco, and pesticides" that --</p> <p>16 A. Yeah, those are the same words,</p> <p>17 that's correct. Without the parens, that's</p> <p>18 right.</p> <p>19 Q. Then we go to the second</p> <p>20 sentence, and go down to the next paragraph</p> <p>21 in Dr. Steinemann's report, the one that</p> <p>22 starts "notably." Do you see that?</p> <p>23 A. Yes.</p> <p>24 Q. Then it continues, "The CPSA</p>

Page 98	Page 100
<p>1 does not require disclosure of all 2 ingredients in products," and it continues 3 for several more sentences. 4 Those sentences appear, word for 5 word, in your second paragraph on Page 18. 6 Correct? 7 MS. O'DELL: Object to the form. 8 A. I believe I paraphrased it. I 9 don't think it's word for word. 10 BY MR. ZELLERS: 11 Q. Well, I don't want to take the 12 time to go through and do a word-for-word 13 analysis. 14 Go to, then, if you will, Page 3 15 of the Steinemann article, and the first 16 sentence on Page 3, "Ingredients can also be 17 exempt from disclosure." 18 You state that sentence as the 19 next sentence in your report. Right? 20 A. Yep. 21 MS. O'DELL: Object to the form. 22 BY MR. ZELLERS: 23 Q. Then if we go to the next 24 paragraph, several sentences in where it</p>	<p>1 Q. Go to Page 27 of your report. 2 Do you see the last full paragraph? 3 A. Yes. 4 Q. Are you aware that the last full 5 paragraph on Page 27 of your report, all but 6 the first sentence was copied and pasted from 7 a Wikipedia entry on mucus membrane? 8 MS. O'DELL: Object to form. 9 A. I believe I paraphrased it. 10 BY MR. ZELLERS: 11 Q. Well, I will let the record 12 speak for itself in terms of doing the 13 word-by-word comparison. I don't believe 14 that you did, but we'll let the record, 15 again, speak for itself. 16 Look at Page -- strike that. 17 (Exhibit No. 14 marked) 18 BY MR. ZELLERS: 19 Q. Look at Exhibit 14, which is the 20 Wikipedia entry or statement on mucous 21 membrane. 22 MS. O'DELL: Is this 14? 23 MR. ZELLERS: Yes, 14. 24</p>
Page 99	Page 101
<p>1 says, "Under the FFDCA, fragrance ingredients 2 that qualify," that sentence appears verbatim 3 in your report. Is that right? 4 MS. O'DELL: Object to the form. 5 A. Where is this? 6 BY MR. ZELLERS: 7 Q. So you go to the second 8 paragraph on Page 3 of the Steinemann 9 article. The sentence starts -- and this is 10 about three or four sentences in -- "Under 11 the FFDCA, fragrance ingredients that qualify 12 as trade secrets," that is your last sentence 13 in Paragraph 2 of your report. Is that 14 right? 15 A. Yeah, that's consistent. 16 MS. O'DELL: Object to the form. 17 BY MR. ZELLERS: 18 Q. All right. Have you read the 19 Consumer Product Safety Act, the Federal 20 Hazardous Substances Act, or the Toxic 21 Substances Control Act? 22 A. I did go pull them up on the 23 internet and took a look at them. I didn't 24 read them in total.</p>	<p>1 BY MR. ZELLERS: 2 Q. You are -- and specifically you 3 have lifted verbatim in the second to last 4 paragraph or the last full paragraph on 5 Page 27 the Wikipedia statement as to what a 6 mucous membrane or mucosa is. And I'm 7 looking at the very first page, the 8 introductory paragraph of Exhibit 14. Is 9 that right? 10 MS. O'DELL: Object to form. 11 A. I believe I paraphrased it, as 12 I've said. 13 BY MR. ZELLERS: 14 Q. Well, you start with -- and I'm 15 looking at the second sentence -- "A mucous 16 membrane or mucosa is a membrane," and then 17 you end the paragraph, four or five sentences 18 later, by stating, "prevent bodily tissues 19 from becoming dehydrated." 20 At least those words are the 21 same words. Correct? 22 A. I will take -- 23 MS. O'DELL: Object to the form. 24 A. I will have to take a look at</p>

Michael Crowley, Ph.D.

Page 102	Page 104
<p>1 it.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. You are aware that Wikipedia is</p> <p>4 not a peer-reviewed source. Correct?</p> <p>5 A. I believe that it's reviewed by</p> <p>6 anyone who wants to, yeah.</p> <p>7 Q. Anyone can update a Wikipedia</p> <p>8 entry?</p> <p>9 A. I believe so, yeah.</p> <p>10 Q. Go to Page 32 of your report.</p> <p>11 I'm looking at the second to last full</p> <p>12 paragraph that starts with "traditionally."</p> <p>13 Do you see where I'm at? This is in Section</p> <p>14 4.5.</p> <p>15 A. Yeah.</p> <p>16 Q. It would be the second to last</p> <p>17 full paragraph on Page 32 of your report.</p> <p>18 Are you aware that that</p> <p>19 paragraph is taken directly from a website</p> <p>20 called Interactive Learning Paradigms,</p> <p>21 Incorporated?</p> <p>22 A. No.</p> <p>23 MS. O'DELL: And excuse me.</p> <p>24 Just -- so you're talking about the</p>	<p>1 you have Exhibit 15 in front of you?</p> <p>2 A. Yes.</p> <p>3 Q. Do you have your report in front</p> <p>4 of you, Page 32?</p> <p>5 A. Yes.</p> <p>6 Q. Do you see the last paragraph of</p> <p>7 Deposition Exhibit 15, the website for</p> <p>8 Interactive Learning Paradigms, Incorporated,</p> <p>9 that begins, "Traditionally, sensitization</p> <p>10 has been determined"?</p> <p>11 Do you see that?</p> <p>12 A. Yes.</p> <p>13 Q. Would you agree that that</p> <p>14 paragraph, excluding the very last sentence</p> <p>15 that is the citation to the EPA, is exactly</p> <p>16 the same paragraph as appears in your report</p> <p>17 on Page 32?</p> <p>18 MS. O'DELL: Object to the form.</p> <p>19 A. Yeah, it looks like it.</p> <p>20 MR. ZELLERS: Let's take a</p> <p>21 break. Thank you.</p> <p>22 THE VIDEOGRAPHER: Going off the</p> <p>23 record, the time is 10:50 a.m.</p> <p>24 (Recess from 10:50 a.m. to</p>
Page 103	Page 105
<p>1 sentence -- the paragraph beginning</p> <p>2 "traditionally"?</p> <p>3 MR. ZELLERS: Yes.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. You are unaware of that, Doctor?</p> <p>6 A. I don't think so.</p> <p>7 Q. Well, it would be wrong for you</p> <p>8 to lift statements from other articles or</p> <p>9 other authors or Wikipedia and include them</p> <p>10 in your report word for word without</p> <p>11 attribution. Correct?</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A. You know, I tried to paraphrase</p> <p>14 where appropriate. If I missed -- missed</p> <p>15 something and didn't cite it, it was an</p> <p>16 oversight.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Take a look at Page 15 -- strike</p> <p>19 that.</p> <p>20 Take a look, if you will, at</p> <p>21 Exhibit 15.</p> <p>22 (Exhibit No. 15 marked)</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. This is the ILPI website. Do</p>	<p>1 11:07 a.m.)</p> <p>2 THE VIDEOGRAPHER: This marks</p> <p>3 the beginning of Disc 2. Back on the</p> <p>4 record, the time is 11:07 a.m.</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. Dr. Crowley, your first opinion</p> <p>7 is that the fragrance chemicals in baby</p> <p>8 powder and Shower to Shower are not in</p> <p>9 compliance with governmental and industry</p> <p>10 standards. Correct?</p> <p>11 A. Yes.</p> <p>12 Q. Your second opinion is that the</p> <p>13 fragrance chemicals in these talcum powder</p> <p>14 products contribute to the inflammatory</p> <p>15 properties, toxicity, and potential</p> <p>16 carcinogenicity of these products. Is that</p> <p>17 right?</p> <p>18 A. Yes.</p> <p>19 Q. Is it your opinion that the</p> <p>20 fragrance chemicals alone can cause cancers?</p> <p>21 MS. O'DELL: Objection; form.</p> <p>22 A. I was not asked to make that</p> <p>23 consideration.</p> <p>24</p>

27 (Pages 102 to 105)



Page 106	Page 108
<p>1 BY MR. ZELLERS:</p> <p>2 Q. You are not expressing an</p> <p>3 opinion as to whether or not the fragrance</p> <p>4 chemicals alone can either cause cancer or</p> <p>5 increase the risk of cancer. Correct?</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 A. That's -- that's correct.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. It also -- strike that.</p> <p>10 You also are not expressing any</p> <p>11 opinion that the fragrance chemicals alone</p> <p>12 can cause or increase the risk for ovarian</p> <p>13 cancer. Correct?</p> <p>14 A. That's correct.</p> <p>15 Q. Are you aware of any</p> <p>16 epidemiology that substantiates the theory</p> <p>17 that fragrance chemicals in talc can either</p> <p>18 cause cancer or increase the risk of cancer?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A. Yeah. As I cited in my report,</p> <p>21 there's a number of fragrance chemicals with</p> <p>22 demonstrated in vitro and in vivo studies</p> <p>23 that demonstrated a higher risk or, in fact,</p> <p>24 in which cancer occurred.</p>	<p>1 MS. O'DELL: Object to the form,</p> <p>2 asked and answered. You may answer the</p> <p>3 question.</p> <p>4 A. No, I did -- I wasn't asked to</p> <p>5 consider that.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. You are not rendering any</p> <p>8 opinion that fragrance chemicals plus talc</p> <p>9 cause ovarian cancer. Correct? You leave</p> <p>10 that to other experts?</p> <p>11 A. That's correct.</p> <p>12 Q. You are not offering any</p> <p>13 opinions about the inhalation exposure to</p> <p>14 fragrance chemicals. Is that right?</p> <p>15 A. That's correct.</p> <p>16 Q. You're not providing any</p> <p>17 opinions relating to asbestos. Correct?</p> <p>18 A. That's correct.</p> <p>19 Q. Your opinions in this matter,</p> <p>20 other than putting them in your report, have</p> <p>21 you published on them?</p> <p>22 A. No.</p> <p>23 Q. What methodology -- strike that.</p> <p>24 Why haven't you published on</p>
Page 107	Page 109
<p>1 BY MR. ZELLERS:</p> <p>2 Q. Those studies you cite to --</p> <p>3 A. Yes.</p> <p>4 Q. -- are reference -- let me</p> <p>5 finish.</p> <p>6 Those studies you cite to are</p> <p>7 referenced in your report. Is that right?</p> <p>8 A. Yes.</p> <p>9 Q. For any individual plaintiff in</p> <p>10 this litigation, do you know what amount of</p> <p>11 fragrance chemicals individual plaintiffs</p> <p>12 were exposed to?</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 A. No, I do not.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. Did you make any effort to</p> <p>17 discern any individual plaintiff's level of</p> <p>18 exposure?</p> <p>19 A. No. I wasn't asked to consider</p> <p>20 that.</p> <p>21 Q. Did you make any effort to</p> <p>22 discern whether any individual plaintiff was</p> <p>23 actually exposed to harmful levels of</p> <p>24 fragrance chemicals?</p>	<p>1 your opinions that you're expressing in this</p> <p>2 case?</p> <p>3 A. I signed a protective order.</p> <p>4 This is all confidential information.</p> <p>5 Q. What methodology did you use in</p> <p>6 reaching your opinions in this case?</p> <p>7 A. I was given the list of</p> <p>8 fragrance chemicals. I set about identifying</p> <p>9 them. The names of the chemicals were in the</p> <p>10 Thomas Dydek report. That often started by</p> <p>11 just plugging that into Google or PubChem to</p> <p>12 see what I could find.</p> <p>13 After doing that, I would then</p> <p>14 try to identify a CAS number so I could</p> <p>15 cross-reference it into various databases and</p> <p>16 gather the physical and chemical properties,</p> <p>17 as well as the safety profile, in vitro or in</p> <p>18 vivo studies, and any published or known</p> <p>19 pharmacological properties.</p> <p>20 I would then go to IFRA and CIR</p> <p>21 websites and look at their -- the information</p> <p>22 they had on it, the FDA website, in</p> <p>23 particular the Inactive Ingredient Database.</p> <p>24 I looked in some of the</p>



Michael Crowley, Ph.D.

Page 110	Page 112
<p>1 journals, specifically Food and Chemical 2 Toxicology, to see what the studies were. I 3 looked at the EFSA website, the European Food 4 Safety Authorities, you know, all the 5 different places that I've identified in my 6 report and gathered as much information as I 7 could on it.</p> <p>8 Once Appendix A and Appendix B 9 were built, then I started classifying them. 10 How many of them are considered -- are 11 classified as irritants? Which ones are 12 allergens? Which ones are eye irritants? 13 And so forth.</p> <p>14 I also looked at, you know, the 15 RTECS database, the Registry of Toxic Effects 16 of Chemical Substances, and so forth.</p> <p>17 There's a tremendous amount of 18 work to identify some of these chemicals 19 because the names given to me, you know, 20 aren't the standard chemical names. So there 21 was a significant effort just to try and 22 figure out what they were.</p> <p>23 Q. Essentially what you have done 24 in this case is to take the list of fragrance</p>	<p>1 and to render your opinions.</p> <p>2 A. I mean, there's books on how you 3 formulate and the steps that you take to 4 gather the information on the materials and 5 chemicals that you're going to use to create 6 a composition and how you go about doing 7 that. So I imagine that it's been published 8 in one way or another.</p> <p>9 Q. To your knowledge, the 10 methodology that you have used in reviewing 11 the information relating to fragrance 12 chemicals and arriving at your opinions has 13 not been subject to peer review. Correct?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. I'm not sure I understand your 16 question. Look, these are chemicals. Okay? 17 I mean, they happen to be fragrances, but 18 they're really no different than a chemical 19 used to make a food or a pharmaceutical. 20 They're chemicals.</p> <p>21 When you're doing a safety 22 assessment of them, there's a number of ways 23 to collect and collate that information. I 24 don't think that anything that I did is</p>
Page 111	Page 113
<p>1 chemicals or fragrance ingredients and then 2 Google them or ChemPub them and go to 3 websites, FDA and IFRA and others, to catalog 4 or to list out information about the 5 fragrance chemicals. Is that right?</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 A. That's -- that's generally 8 correct. I also, you know, like I said, 9 looked at the technical literature. I mean, 10 it wasn't just websites, databases. I tried 11 to examine the totality of the evidence for 12 each and every chemical and collate that into 13 a meaningful -- in a meaningful way to 14 examine their properties and to answer the 15 questions that were posed to me.</p> <p>16 BY MR. ZELLERS:</p> <p>17 Q. Do you know whether the 18 methodology that you've used, whether that's 19 been published anywhere?</p> <p>20 A. The methodology that I used to 21 gather the information, whether --</p> <p>22 Q. Yes.</p> <p>23 A. -- that's been published?</p> <p>24 Q. Used to gather the information</p>	<p>1 different than what a standard formulator 2 would use in putting a product together for 3 examining the safety of a -- of a commercial 4 product.</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. Do you believe the standard for 7 proving causation in the scientific 8 literature is the same as the one that 9 applies in litigation?</p> <p>10 MS. O'DELL: Object to the form.</p> <p>11 Are you talking about for a specific 12 disease or --</p> <p>13 MR. ZELLERS: I'm just asking 14 the questions. If you can, just limit 15 your objection to form.</p> <p>16 BY MR. ZELLERS:</p> <p>17 Q. So I'm asking you that question, 18 Doctor. If you can answer it, please do. If 19 you can't, okay.</p> <p>20 A. Could --</p> <p>21 MS. O'DELL: I object to the 22 form of the question. It's vague. 23 It's unclear. But if you understand 24 it, you may answer it.</p>

29 (Pages 110 to 113)

Michael Crowley, Ph.D.

Page 114	Page 116
<p>1 A. I was going to ask him to repeat 2 it, please. 3 BY MR. ZELLERS: 4 Q. Sure. Do you believe the 5 standard for proving causation in the 6 scientific literature is the same as the one 7 that applies in litigation? 8 A. I'm not sure. 9 Q. Are you aware of any publication 10 that links the fragrance chemicals in baby 11 powder and Shower to Shower to ovarian 12 cancer? 13 MS. O'DELL: Object to the form. 14 A. I don't believe I found a source 15 that made that association. However, you 16 know, as I said earlier, a number of these 17 chemicals have demonstrated studies against 18 Chinese hamster ovary cells or in vivo animal 19 studies in which cancers in the ovaries were 20 found. 21 BY MR. ZELLERS: 22 Q. Doctor, you have found no 23 publication that links the fragrance 24 chemicals in baby powder and Shower to Shower</p>	<p>1 Q. Any others? 2 A. Yes. d-Limonene was found to 3 be cytotoxic against Chinese hamster ovary 4 cells. I'm not sure how to pronounce the 5 name of this author, but it's 6 K-P-O-V-I-E-S-S-I, et al., from 2014. 7 Q. What page of your report? 8 A. Page 22. 9 Q. All right. Any other articles 10 or publications that link the fragrance 11 chemicals or a fragrance chemical that you 12 believe is in baby powder and Shower to 13 Shower to ovarian cancer? 14 A. There's a bunch of them. 15 Page 22, Skatole, cytotoxic against Chinese 16 hamster ovary cells. That was in Reddy, 17 2002. 18 Q. Any others? 19 A. Yes. Styrene, cytogenic DNA 20 damage, DNA inhibition, sister chromatid -- 21 THE REPORTER: I'm sorry. Try 22 to slow down for me. I've got to write 23 what you're saying. 24 THE WITNESS: I'm sorry.</p>
Page 115	Page 117
<p>1 and human ovarian cancer. Correct? 2 A. Human ovarian cancer? 3 Q. Yes. 4 MS. O'DELL: Excuse me. Object 5 to the form. You may answer. 6 A. Not humans, no. Animal models, 7 yes. 8 BY MR. ZELLERS: 9 Q. What animal models are you 10 referring to that relate to fragrance 11 chemicals? 12 A. I'm going to refer to my report. 13 Q. Sure. 14 A. So benzaldehyde, sister 15 chromatid exchange, which is a mutation, in 16 Chinese hamster ovary cells. That was 17 published by Galloway in '87. 18 Q. What reference is that? 19 A. Galloway, et al., 1987. 20 Q. You're reading from your report. 21 A. That's correct. 22 Q. What page of your report are you 23 reading from? 24 A. Page 22.</p>	<p>1 THE REPORTER: That's okay. 2 A. Cytogenic DNA damage, DNA 3 inhibition, sister chromatid exchange, un -- 4 BY MR. ZELLERS: 5 Q. And that relates to ovarian 6 cancer. Correct? 7 A. Yes. 8 MS. O'DELL: Please finish, 9 Dr. Crowley. 10 A. Benzyl alcohol, cytogenic in 11 Chinese hamster ovary cells, National 12 Toxicology Program, 1989. 13 Citral, selective oocyte 14 degeneration and impaired fertility in female 15 rats. Toaff, which is spelled T-O-A-F-F, 16 Abramovici, Sporn &amp; Liban, 1979. 17 Valid genotoxic (induction of 18 sister chromatid exchange) in Chinese hamster 19 ovary cells, National Toxicology Program, 20 2003. And same author as before, 21 K-P-O-V-I-E-S-S-I, 2014. 22 Coumarin, sister chromatic 23 exchange in Chinese hamster ovary cells, 24 Galloway, 1987.</p>

30 (Pages 114 to 117)

Michael Crowley, Ph.D.

Page 118	Page 120
<p>1 BY MR. ZELLERS:</p> <p>2 Q. Are you finished?</p> <p>3 A. No. Ethyl methylphenylglycidate</p> <p>4 sister chromatid exchange and chromosomal</p> <p>5 aberrations in Chinese hamster ovary cells,</p> <p>6 Galloway, 1987.</p> <p>7 European Food Safety Authority,</p> <p>8 same substance. There's substantial evidence</p> <p>9 of a genotoxic potential from the available</p> <p>10 in vitro and in vivo studies.</p> <p>11 Eugenol, sister chromatid</p> <p>12 exchange and chromosomal aberrations in</p> <p>13 Chinese hamster ovary cells, Galloway, 1987.</p> <p>14 StyraX oil, sister chromatid</p> <p>15 exchange in Chinese hamster ovary cells,</p> <p>16 Gulati, Witt, Anderson, Zeiger &amp; Shelby,</p> <p>17 1989.</p> <p>18 para-Cresol, cytogenetic in</p> <p>19 Chinese hamster ovary cells, DNA damage in</p> <p>20 human lymphocytes, morphologic</p> <p>21 transformations in mice, RTECS, the Cosmetic</p> <p>22 Ingredient Review Panel, 2006.</p> <p>23 para-Cresol was considered</p> <p>24 positive for reducing chromosomal aberrations</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. Are you familiar with a paradigm</p> <p>3 developed by the National Academy Of</p> <p>4 Sciences, also known as the NRC?</p> <p>5 A. I have heard of the NRC. I'm</p> <p>6 trying to remember what the acronym stands</p> <p>7 for. Would you please enlighten me?</p> <p>8 Q. Let's go step by step.</p> <p>9 (Exhibit No. 16 marked)</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. Deposition Exhibit 16 is an EPA</p> <p>12 NRC Risk Assessment Paradigm. Is that right?</p> <p>13 MS. O'DELL: If you haven't seen</p> <p>14 this before, Doctor --</p> <p>15 THE WITNESS: I haven't --</p> <p>16 MS. O'DELL: -- feel free to</p> <p>17 take a few minutes and --</p> <p>18 A. I haven't seen this particular</p> <p>19 document before.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. Are you generally familiar with</p> <p>22 risk assessment?</p> <p>23 A. Yes.</p> <p>24 Q. Are you aware and do you agree</p>
Page 119	Page 121
<p>1 in Chinese hamster ovary cells under both</p> <p>2 activation and non-activation conditions.</p> <p>3 para-Cymene, cytotoxic against</p> <p>4 Chinese hamster ovary cells.</p> <p>5 Q. Are you finished?</p> <p>6 A. Propanedioic acid, diethyl</p> <p>7 ester, tumorigenic in mice following oral</p> <p>8 dosing, RTECS.</p> <p>9 Q. Are you finished?</p> <p>10 A. That's -- that's the baby powder</p> <p>11 product. I'd like to go to Shower to Shower,</p> <p>12 if you'd like.</p> <p>13 Q. Is it all listed in your report?</p> <p>14 A. Yes.</p> <p>15 Q. All right. Let's move on, and</p> <p>16 we'll incorporate, as we have, your report</p> <p>17 into your response.</p> <p>18 You are familiar -- strike that.</p> <p>19 Are you familiar with a human</p> <p>20 health risk assessment?</p> <p>21 MS. O'DELL: Object to the form</p> <p>22 of -- to the preamble to the question.</p> <p>23 A. Yes.</p> <p>24</p>	<p>1 that there's different stages or steps to a</p> <p>2 risk assessment?</p> <p>3 A. Yes.</p> <p>4 Q. Look at the bottom of Page 16.</p> <p>5 A. I only have three pages here.</p> <p>6 Q. I'm sorry. That's a bad</p> <p>7 question. Let me withdraw it.</p> <p>8 Look at the bottom of the first</p> <p>9 page of Deposition Exhibit 16, which sets</p> <p>10 forth the National Academy of Sciences' risk</p> <p>11 assessment steps.</p> <p>12 Do you see that at the bottom of</p> <p>13 the first page of Exhibit 16?</p> <p>14 A. Yes.</p> <p>15 Q. Do you agree that the steps in a</p> <p>16 risk assessment are; No. 1, hazard</p> <p>17 identification; No. 2, dose response</p> <p>18 assessment; No. 3, exposure assessment, and,</p> <p>19 No. 4, risk characterization?</p> <p>20 MS. O'DELL: Objection; form.</p> <p>21 A. That's what it says.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. Are you generally familiar with</p> <p>24 these steps of a risk assessment?</p>

31 (Pages 118 to 121)

Michael Crowley, Ph.D.

Page 122	Page 124
<p>1 A. Yes.</p> <p>2 Q. All four steps are necessary to</p> <p>3 complete a full risk assessment. Is that</p> <p>4 right?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. According to this paradigm and</p> <p>7 this model.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. And according to your</p> <p>10 background, your training, your education.</p> <p>11 Is that right?</p> <p>12 MS. O'DELL: Object to form.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. Or do you have any background</p> <p>15 training in risk assessment?</p> <p>16 A. I do have background in it,</p> <p>17 and --</p> <p>18 Q. Do you agree that generally --</p> <p>19 MS. O'DELL: Excuse me, sir. I</p> <p>20 don't think he was finished.</p> <p>21 A. Yeah. I would have to study</p> <p>22 this in greater detail to ensure that it's</p> <p>23 consistent with how I've seen it done. I'm</p> <p>24 more familiar with the FDA's risk assessment</p>	<p>1 hazard. I was provided with a list of</p> <p>2 chemicals and asked two questions.</p> <p>3 Q. You have not done a dose</p> <p>4 response assessment in this case for any of</p> <p>5 the fragrance chemicals in either the talc</p> <p>6 powder or the Shower to Shower powder.</p> <p>7 Correct?</p> <p>8 A. I was unable to do it because I</p> <p>9 wasn't given, No. 1, the information to know</p> <p>10 how much of each fragrance chemical was</p> <p>11 present in the composition, and when we were</p> <p>12 given that information, there's no units</p> <p>13 there.</p> <p>14 More importantly, you know, as I</p> <p>15 just cited from my report, some of these</p> <p>16 fragrance chemicals are genotoxic. You don't</p> <p>17 need to do a dose response relationship for a</p> <p>18 genotoxic material, because genotoxins you</p> <p>19 need one molecule for there to be an</p> <p>20 increased risk, one.</p> <p>21 Q. You have not done any exposure</p> <p>22 assessment in this case. Correct?</p> <p>23 A. That's correct. I was not asked</p> <p>24 to do so.</p>
Page 123	Page 125
<p>1 models. And there's another model called the</p> <p>2 Muller model that's been used in toxicology</p> <p>3 and pharmacology.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. Did you attempt to do a risk</p> <p>6 assessment analysis in this case?</p> <p>7 A. I wasn't asked to do a risk</p> <p>8 assessment.</p> <p>9 Q. Do you think it would be</p> <p>10 important in terms of arriving at your</p> <p>11 opinions in this case to do a risk</p> <p>12 assessment?</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 A. Not necessarily.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. All right. You have not done a</p> <p>17 risk assessment in this case. Correct?</p> <p>18 MS. O'DELL: Excuse me. Object</p> <p>19 to the form.</p> <p>20 A. No, I have not.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. You identified a potential</p> <p>23 hazard. Is that right?</p> <p>24 A. I was not asked to identify a</p>	<p>1 Q. You have not done a risk</p> <p>2 characterization or analysis in this case.</p> <p>3 Correct?</p> <p>4 A. That's correct. And I wasn't</p> <p>5 asked to do that.</p> <p>6 Q. Are you familiar with --</p> <p>7 MS. O'DELL: Excuse me.</p> <p>8 Counsel, with your permission, can I</p> <p>9 lodge my objection? I was slow off the</p> <p>10 mark to that question.</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. Are you familiar with the</p> <p>13 concept of dose response?</p> <p>14 A. Yes.</p> <p>15 Q. The science of toxicology is</p> <p>16 based on the principle that there is a</p> <p>17 relationship between a toxic reaction and the</p> <p>18 amount of a substance received. Correct?</p> <p>19 A. That's only partially correct,</p> <p>20 Counselor. As I just indicated, genotoxic</p> <p>21 materials do not -- are not thresholded.</p> <p>22 They don't have a threshold. One molecule is</p> <p>23 enough to cause an increased risk.</p> <p>24 Non-genotoxic carcinogens do</p>

32 (Pages 122 to 125)

Page 126	Page 128
<p>1 have the dose response relationship.</p> <p>2 Q. You've not considered dose</p> <p>3 response in this case. Correct?</p> <p>4 A. I wasn't asked --</p> <p>5 MS. O'DELL: Excuse me. Object</p> <p>6 to the form, misstates his testimony.</p> <p>7 You may answer the question.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Go ahead.</p> <p>10 A. I was not asked to, and I was</p> <p>11 unable to based on the information that I was</p> <p>12 given.</p> <p>13 Q. Those fragrance chemicals that</p> <p>14 you believe are capable of a genotoxic</p> <p>15 response, have you identified those in your</p> <p>16 report?</p> <p>17 A. First of all, I don't believe</p> <p>18 they are. I didn't to do the research. I'm</p> <p>19 simply reporting what I found in the</p> <p>20 research. Those conclusions were drawn by</p> <p>21 the authors of those studies. I'm simply</p> <p>22 reporting that they were found to have valid</p> <p>23 genotoxic results.</p> <p>24 Q. What you did is you went out and</p>	<p>1 because it couldn't be reproduced or the</p> <p>2 study design is not consistent with</p> <p>3 established standard."</p> <p>4 So I certainly took those into</p> <p>5 consideration as well. So if it was a study</p> <p>6 that was not considered to be valid, I didn't</p> <p>7 report it.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. There is a difference between</p> <p>10 animal studies and human studies. Correct?</p> <p>11 A. That's correct.</p> <p>12 Q. You can't just apply an animal</p> <p>13 study or results of an animal study to a</p> <p>14 human study. Correct?</p> <p>15 MS. O'DELL: Object to the form.</p> <p>16 A. I don't know how to answer that</p> <p>17 question. What do you mean by "apply"?</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. I will withdraw the question.</p> <p>20 Do you agree that all substances</p> <p>21 can be potentially hazardous if the dose is</p> <p>22 too high?</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24 A. I mean, that's sort of a</p>
Page 127	Page 129
<p>1 you were asked by counsel for plaintiffs to</p> <p>2 catalog the information relating to these</p> <p>3 fragrance chemicals. Is that right?</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 A. I reviewed the totality of the</p> <p>6 evidence on the chemicals.</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. You then have reported that</p> <p>9 information in your report. Correct?</p> <p>10 MS. O'DELL: Object to the form.</p> <p>11 A. Yes.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. Any genotoxic characteristic of</p> <p>14 any of the fragrance chemicals would be set</p> <p>15 forth in the information you've collected in</p> <p>16 your report. Fair?</p> <p>17 MS. O'DELL: Object to the form.</p> <p>18 A. Yeah. If I found a genotoxic</p> <p>19 result, I would report it unless, of</p> <p>20 course -- and there were some instances --</p> <p>21 for example, the European Food Safety</p> <p>22 Authority was actually quite good about</p> <p>23 saying, you know, "This result was positive</p> <p>24 for genotoxicity, but we are dismissing it</p>	<p>1 hypothetical. What if -- fairytale land. So</p> <p>2 I suppose, if you have too much water, you</p> <p>3 could drown, or too much salt, that could</p> <p>4 cause problems.</p> <p>5 Generally speaking, poisons are,</p> <p>6 you know, dose-and-exposure relationship.</p> <p>7 So, in that context, yes, most materials</p> <p>8 could be hazardous if too much is consumed or</p> <p>9 if the exposure is too great.</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. Do you agree that for chemicals</p> <p>12 and substances there can be multiple routes</p> <p>13 of exposure?</p> <p>14 A. I'm not sure what you're asking</p> <p>15 me. Yes, you know, you can inhale air and</p> <p>16 you can also have transdermal absorption.</p> <p>17 Q. You can also have ingestion.</p> <p>18 Correct?</p> <p>19 A. Yeah.</p> <p>20 Q. Those are all different routes</p> <p>21 of exposure?</p> <p>22 A. Yes.</p> <p>23 Q. Is that right?</p> <p>24 A. I prefer to call them routes of</p>



Michael Crowley, Ph.D.

Page 130	Page 132
<p>1 administration, typically, is the 2 nomenclature used. 3 Q. Do you agree that if a person is 4 exposed to a substance by ingestion, they 5 will absorb a different amount of a substance 6 than if the substance is applied to the skin, 7 a dermal exposure? 8 A. So you're speaking in 9 generalities, and it varies from substance to 10 substance. The bioavailability is, I think, 11 what you're referring to. So you may eat 12 something and only half of it is absorbed 13 into the body, a portion of it may be 14 metabolized in the stomach or not absorbed at 15 all. 16 It would have a different 17 pharmacokinetic profile when absorbed through 18 the skin, perhaps. So route of 19 administration does impact pharmacokinetics 20 and biological activity, including toxicology 21 and pharmacology. 22 Q. Can the route of exposure have 23 an impact on the amount of a substance that 24 is absorbed by the body?</p>	<p>1 genotoxic, one molecule is enough to cause an 2 increase in risk associated with that 3 particular compound. 4 So there's general principles 5 that a person of skill can look at, and they 6 don't need to do a full risk assessment to 7 draw a conclusion as to its safety or risk 8 associated with an exposure. 9 Q. Your answer to my question 10 relates to genotoxic materials. Correct? 11 A. All substances, in general. 12 Q. So it is not necessary, in order 13 to assess the risk of a substance, to do a 14 dose response assessment. Is that your 15 testimony? 16 MS. O'DELL: Object -- 17 A. No. I think -- 18 MS. O'DELL: Excuse me. Object 19 to the form, misstates his testimony. 20 A. Yeah, you're misstating what I 21 just said. I can read an MSDS and have a 22 very good sense on how to handle a chemical 23 or a SafeBridge assessment or any number of 24 safety assessments. I don't need to do a</p>
Page 131	Page 133
<p>1 A. Yes. 2 Q. Do you agree that it is not 3 scientifically valid to only identify a 4 hazard and then try to formulate conclusions 5 about the risk of a particular contaminant 6 without going through a full risk assessment? 7 MS. O'DELL: Object to the form. 8 A. Can you repeat the question? 9 BY MR. ZELLERS: 10 Q. Sure. Do you agree that in 11 order to have a scientifically valid opinion 12 with respect to the risk of a particular 13 contaminant, it is important to go through a 14 full risk assessment? 15 A. No. 16 MS. O'DELL: Object to the form. 17 BY MR. ZELLERS: 18 Q. It's not necessary? 19 A. No. 20 Q. It's not necessary to look at 21 dose response in that relationship. Correct? 22 A. As I told you earlier, genotoxic 23 materials do not live under a dose response 24 relationship. If it's been classified as</p>	<p>1 risk analysis. That's already been done and 2 published in the literature. 3 BY MR. ZELLERS: 4 Q. Someone, though, has to do -- as 5 part of a risk assessment to understand the 6 risk of a particular, in this case, fragrance 7 chemical, someone needs to do a dose response 8 assessment. Correct? 9 MS. O'DELL: Object to the form. 10 A. Are you asking me how data 11 inside an MSDS or a tox study is -- I mean, 12 I'm not sure what you're asking me. If 13 you're asking me how tox studies are done and 14 how safety information on chemicals is 15 created, they generally are done. I don't 16 need to do one to review the data available 17 on something to understand the risk 18 associated with that particular chemical. 19 BY MR. ZELLERS: 20 Q. My question is: Someone, in 21 order to assess the risk of a particular 22 chemical, needs to do a risk assessment. 23 Correct? 24 A. They can do -- certainly do</p>

34 (Pages 130 to 133)

Page 134	Page 136
<p>1 that.</p> <p>2 Q. The risk assessment, one element</p> <p>3 or part of it, would be to do a dose response</p> <p>4 assessment. Correct?</p> <p>5 A. That is often done with new</p> <p>6 molecular entities and chemicals to establish</p> <p>7 their safety profile.</p> <p>8 Q. Another part of a risk</p> <p>9 assessment would be an exposure assessment.</p> <p>10 Correct?</p> <p>11 A. Yes.</p> <p>12 Q. There then would be a risk</p> <p>13 characterization. Is that right?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. Yes.</p> <p>16 BY MR. ZELLERS:</p> <p>17 Q. All right. You have not done</p> <p>18 that analysis for the fragrance chemicals</p> <p>19 identified in the talcum powder in this case.</p> <p>20 Correct?</p> <p>21 MS. O'DELL: Objection.</p> <p>22 A. No. I relied upon the available</p> <p>23 information for the chemicals from, you know,</p> <p>24 MSDS sheets and the published studies that</p>	<p>1 A. I counted. The same way for</p> <p>2 baby powder. I counted based off of the</p> <p>3 information disclosed.</p> <p>4 Q. In Dr. Dydek's report?</p> <p>5 A. Yeah.</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. Does the list of fragrance</p> <p>9 chemicals that you relied on indicate the</p> <p>10 amount of each chemical in baby powder?</p> <p>11 A. No.</p> <p>12 Q. Does it indicate the amount of</p> <p>13 each chemical in baby powder -- strike that.</p> <p>14 Withdraw.</p> <p>15 Does it indicate the amount of</p> <p>16 each chemical in Shower to Shower?</p> <p>17 A. No.</p> <p>18 Q. What is the concentration of</p> <p>19 each of the fragrance chemicals that you have</p> <p>20 identified in a bottle of baby powder?</p> <p>21 MS. O'DELL: Object to the form.</p> <p>22 A. I don't know. I wasn't provided</p> <p>23 that information.</p> <p>24</p>
Page 135	Page 137
<p>1 did do those things.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. In your report, you state that</p> <p>4 there are 141 fragrance chemicals in baby</p> <p>5 powder. Is that right?</p> <p>6 A. Yes.</p> <p>7 Q. Where did you get that number</p> <p>8 from?</p> <p>9 A. I counted the ones that were</p> <p>10 disclosed to me in the Dydek report, and I</p> <p>11 noted that some of those fragrances are</p> <p>12 actually mixtures of chemicals themselves.</p> <p>13 So, for example, certain gums are actually --</p> <p>14 or resins are actually crude extracts that</p> <p>15 are actually a combination. And I think I</p> <p>16 used the word "at least."</p> <p>17 Q. You did not do any independent</p> <p>18 testing of the baby powder to try to</p> <p>19 determine what fragrance chemicals were</p> <p>20 included in the powder. Correct?</p> <p>21 A. No, I did not do any testing.</p> <p>22 Q. In your report, you say there</p> <p>23 are 53 fragrance chemicals in Shower to</p> <p>24 Shower. Where did you get that number from?</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. What is the concentration of</p> <p>3 each of the fragrance chemicals that you have</p> <p>4 identified in a bottle of Shower to Shower?</p> <p>5 A. I don't know. I wasn't provided</p> <p>6 that information.</p> <p>7 Q. Can you tell me how much of each</p> <p>8 fragrance chemical is in one ounce of baby</p> <p>9 powder?</p> <p>10 A. No, I cannot.</p> <p>11 Q. In one ounce of Shower to</p> <p>12 Shower?</p> <p>13 A. No, I can't. In part, it would</p> <p>14 have been nice to have seen where -- in</p> <p>15 industry standard content uniformity studies.</p> <p>16 So the fragrance is blended with talcum</p> <p>17 powder, and it's industry standard to take</p> <p>18 aliquots of the blend and test them to verify</p> <p>19 that they're uniformly and homogeneously</p> <p>20 mixed, but that information wasn't made</p> <p>21 available to me.</p> <p>22 Q. Did you ask counsel for that</p> <p>23 information?</p> <p>24 A. I did.</p>



Michael Crowley, Ph.D.

Page 138	Page 140
<p>1 Q. Did you do any independent 2 testing to determine the concentration of the 3 fragrance chemicals? 4 A. No. 5 Q. In what other products are any 6 of these ingredients used? Are you -- 7 A. I wasn't asked to consider that. 8 MS. O'DELL: Excuse me. Excuse 9 me. When you say "ingredients," you're 10 talking about the totality of all the 11 chemicals that are listed in his 12 report, or are you asking just 13 generally are there other products that 14 they're used in? 15 MR. ZELLERS: Counsel, I'm more 16 concerned if the witness doesn't 17 understand the question than whether 18 you understand the question. My 19 question -- 20 MS. O'DELL: I understand that, 21 but I need to understand in order to 22 object and make my record, so -- 23 BY MR. ZELLERS: 24 Q. My question is: Did you attempt</p>	<p>1 want to complete your answer, Doctor, 2 you are welcome to do that. 3 A. Yeah. So it's disclosed in 4 my -- in my report. I reviewed the FDA's 5 Inactive Ingredient Database for each one of 6 these chemicals, and on Page 43, Table 14 7 lists those chemicals that are listed on the 8 Inactive Ingredient Database. 9 Those chemicals listed for 10 topical administration -- in other words, to 11 the skin -- and those chemicals that are 12 listed for vaginal administration. According 13 to paragraph -- or Table 14 on Page 43, 14 benzyl alcohol present in baby powder is 15 listed for vaginal administration. That's 16 the only one in baby powder. 17 In Shower to Shower, that 18 information is in Table 23 on Page 61, the 19 same type of table with IID listed, topical 20 administration and vaginal administration. 21 In Shower to Shower, propylene glycol and 22 t-butyl hydroquinone are the only two that 23 are in approved products for vaginal 24 administration.</p>
Page 139	Page 141
<p>1 to look or make a determination as to in what 2 other products any of these fragrance 3 chemicals are used? 4 A. Yes, I did. I looked on the FDA 5 Inactive Ingredients Database. 6 Q. Did you make a determination as 7 to in what other products they are used 8 vaginally? 9 A. Yes. 10 Q. Did you include that in your 11 report? 12 A. Yes. 13 Q. What fragrance chemicals did you 14 identify that are used vaginally? 15 A. I'm going to have to go look at 16 the report, because I don't have that 17 committed to memory, but -- 18 Q. Well, do you state it or set it 19 forth in the report? 20 A. Yes. 21 Q. Just tell me the page or where I 22 can look for that notation. 23 MS. O'DELL: You -- you may tell 24 him the page, certainly, but if you</p>	<p>1 BY MR. ZELLERS: 2 Q. Do you know when the list of 3 fragrance chemicals that you relied on from 4 Dr. Dydek's report was produced? 5 MS. O'DELL: Object to the form. 6 A. Do I know when I received it? 7 Are you asking when I got it or -- 8 BY MR. ZELLERS: 9 Q. My question is: Do you know for 10 what period of time that list of fragrance 11 ingredients was for? 12 MS. O'DELL: Object to the form. 13 A. I'm not sure I understand what 14 you're asking me. 15 BY MR. ZELLERS: 16 Q. Sure. 17 A. Are you asking me do I know what 18 time period that fragrance composition was 19 used in those products? 20 Q. Let me try to ask a better 21 question. 22 Do you know if the list of 23 fragrance chemicals for the baby powder is 24 the list of current fragrance ingredients?</p>

36 (Pages 138 to 141)

Page 142	Page 144
<p>1 A. No, I --</p> <p>2 MS. O'DELL: Objection --</p> <p>3 objection to form. You can answer.</p> <p>4 A. Yeah, I don't know with</p> <p>5 certainty. We did ask for the list of</p> <p>6 fragrance chemicals and all change control</p> <p>7 documents associated with that composition.</p> <p>8 So the presumption is that the information</p> <p>9 that we were given is current.</p> <p>10 As I was finishing this report,</p> <p>11 we were provided some information that showed</p> <p>12 a few compositional changes over the years.</p> <p>13 For example, styrene, I believe, was removed</p> <p>14 in, I think, 2014.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. Do you know if the list of</p> <p>17 fragrance chemicals in Shower to Shower that</p> <p>18 you relied on is the current list of</p> <p>19 fragrance chemicals?</p> <p>20 MS. O'DELL: Object to the form.</p> <p>21 A. Yeah, same answer.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. Do you know if the list of</p> <p>24 fragrance chemicals for either baby powder or</p>	<p>1 potential harm caused by the fragrance</p> <p>2 chemicals in the products?</p> <p>3 A. You know, I would have to review</p> <p>4 those changes and take that into</p> <p>5 consideration. To be able to provide an</p> <p>6 open-ended answer without reviewing the</p> <p>7 underlying information and what those changes</p> <p>8 were I think would be inappropriate. So I'd</p> <p>9 be happy to take that into consideration and</p> <p>10 be given an opportunity to study it.</p> <p>11 Q. Let me ask you about your first</p> <p>12 opinion, and that is that several of the</p> <p>13 chemicals used in the J&amp;J Consumer Products,</p> <p>14 Inc., talc products are not in compliance</p> <p>15 with governmental and industry standards.</p> <p>16 That's your opinion. Is that right?</p> <p>17 A. Correct.</p> <p>18 Q. As part of that opinion, you</p> <p>19 identify 22 fragrance chemicals in baby</p> <p>20 powder with a regulatory concern. Is that</p> <p>21 right?</p> <p>22 A. Yes.</p> <p>23 Q. And 20 fragrance chemicals in</p> <p>24 Shower to Shower with a regulatory concern.</p>
Page 143	Page 145
<p>1 Shower to Shower has changed over time?</p> <p>2 MS. O'DELL: Object to the form,</p> <p>3 asked and answered.</p> <p>4 A. I answered that. We were</p> <p>5 provided with one document that showed a</p> <p>6 history of changes, and it did show some</p> <p>7 changes over time.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. That is the only information you</p> <p>10 have in terms of how the composition of</p> <p>11 fragrance chemicals has changed relating to</p> <p>12 either baby powder or Shower to Shower. Is</p> <p>13 that correct?</p> <p>14 A. Yes.</p> <p>15 MS. O'DELL: Object to the form.</p> <p>16 BY MR. ZELLERS:</p> <p>17 Q. Do you know whether the</p> <p>18 concentration of the fragrance chemicals has</p> <p>19 changed over time for either baby powder or</p> <p>20 Shower to Shower?</p> <p>21 A. I do not know.</p> <p>22 Q. If the list or concentration of</p> <p>23 the fragrance chemicals changed over time,</p> <p>24 would that impact your analysis regarding any</p>	<p>1 Is that right?</p> <p>2 A. Yes.</p> <p>3 Q. You define regulatory concern as</p> <p>4 seven different categories on Page 18 of your</p> <p>5 report. Is that right?</p> <p>6 A. Yes.</p> <p>7 Q. Is regulatory concern a</p> <p>8 recognized term in the field of toxicology?</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. I mean, toxicology and</p> <p>11 regulations are two different things, so I</p> <p>12 think you're sort of confusing two very</p> <p>13 different subjects, so --</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. You're the one who is opining</p> <p>16 that there is regulatory concern with regard</p> <p>17 to certain of the fragrance chemicals.</p> <p>18 Correct?</p> <p>19 A. So, yes, I am summarizing review</p> <p>20 of the compliance of these particular</p> <p>21 chemicals. And I'd just like to add that I</p> <p>22 was provided with some documents where J&amp;J</p> <p>23 did their own regulatory review of these</p> <p>24 chemicals, and the words they used were</p>

Page 146	Page 148
<p>1 "regulatory concern." So I borrowed that --</p> <p>2 I don't think that's plagiarism, but I</p> <p>3 borrowed the use of those two words to title</p> <p>4 this section.</p> <p>5 Q. In the couple of courses that</p> <p>6 you took on toxicology, do you recall being</p> <p>7 taught that regulatory concern is a</p> <p>8 recognized term in that field?</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. You're confusing two completely</p> <p>11 different things.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. Can you answer my question?</p> <p>14 A. And I am answering. And, you</p> <p>15 know, apples and oranges are both fruits, but</p> <p>16 they have different colors. Your question</p> <p>17 doesn't make any sense at all.</p> <p>18 Regulations and toxicology are</p> <p>19 two different things.</p> <p>20 Q. Is regulatory concern a</p> <p>21 recognized term in the field of regulations?</p> <p>22 MS. O'DELL: Object to the form.</p> <p>23 A. I suppose you could ask the FDA.</p> <p>24</p>	<p>1 Table 6. Do you have Table 6 in front of</p> <p>2 you?</p> <p>3 A. I do. Page 18 and 19 and 20.</p> <p>4 Q. The column to the right,</p> <p>5 regulatory concern -- in that column, you</p> <p>6 list the reasons you believe the specific</p> <p>7 chemicals you list constitute a regulatory</p> <p>8 concern. Is that right?</p> <p>9 A. Yes.</p> <p>10 Q. You did the same thing for</p> <p>11 Shower to Shower in Table 15?</p> <p>12 A. Yes.</p> <p>13 Q. Is that right?</p> <p>14 A. Yes.</p> <p>15 Q. The reasons that you include in</p> <p>16 this column are the same seven categories</p> <p>17 that you include in your definition of</p> <p>18 regulatory concern from Page 18 of your</p> <p>19 report. Is that right?</p> <p>20 A. Yes.</p> <p>21 Q. You only -- strike that.</p> <p>22 In Table 6 and Table 15, you</p> <p>23 only identify three specific statutory and/or</p> <p>24 regulatory sources in the regulatory concern</p>
Page 147	Page 149
<p>1 BY MR. ZELLERS:</p> <p>2 Q. You list all the fragrance</p> <p>3 chemicals in baby powder that you believe</p> <p>4 present a regulatory concern in Table 6 of</p> <p>5 your report. Is that right?</p> <p>6 A. Yes, as they've been defined</p> <p>7 within the report.</p> <p>8 Q. You list all the chemicals that</p> <p>9 you believe present a regulatory concern</p> <p>10 relating to Shower to Shower in Table 15 of</p> <p>11 your report. Is that right?</p> <p>12 A. I believe so, yes.</p> <p>13 Q. If a fragrance chemical is</p> <p>14 included in Table 6 or Table 15, does that</p> <p>15 mean it causes cancer?</p> <p>16 A. No. You know, again, you're</p> <p>17 confusing regulations with toxicology. So</p> <p>18 the first question relates to do regulatory</p> <p>19 bodies, trade groups, say you can use these</p> <p>20 things. Okay? Those regulations are often</p> <p>21 based on toxicology, but you seem to be</p> <p>22 confused on how they're applied and how this</p> <p>23 information is to be understood.</p> <p>24 Q. Take a look, if you will, at</p>	<p>1 column. Is that right?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A. I'd have to go check that.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. You list CFR Title 21, CIR,</p> <p>6 which is Cosmetic Ingredient Review, and</p> <p>7 IFRA, International Fragrance Association.</p> <p>8 Is that right?</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. I think, actually, there's four.</p> <p>11 The Code of Federal Regulations, IFRA, CIR,</p> <p>12 and the EU Annex, which I think is from -- is</p> <p>13 that from European Food Safety -- you know, I</p> <p>14 didn't -- I didn't count it up. Like I said,</p> <p>15 I tried to look at all the different sources,</p> <p>16 and these were the primary regulatory bodies</p> <p>17 that make (inaudible) --</p> <p>18 Q. The other --</p> <p>19 THE REPORTER: I'm sorry. The</p> <p>20 regulatory bodies that?</p> <p>21 THE WITNESS: That make those</p> <p>22 regulations.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. The other four categories of</p>

Page 150	Page 152
<p>1 potential regulatory concern that come from</p> <p>2 your report, Page 18, those are not listed as</p> <p>3 reasons for regulatory concern in the table.</p> <p>4 Is that right?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. I'm sorry. I'm not sure I</p> <p>7 follow your question.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. And let me ask a better</p> <p>10 question.</p> <p>11 The other four categories that</p> <p>12 you include in the regulatory concern column</p> <p>13 do not cite or reference any regulations or</p> <p>14 databases. Is that right?</p> <p>15 A. Well, for example, not permitted</p> <p>16 for cosmetic use. Copper chlorophyll, it is</p> <p>17 an approved colorant by FDA, but it's not</p> <p>18 allowed for use in cosmetics. So I didn't</p> <p>19 cite to the specific source of that</p> <p>20 information here in this table, but if you go</p> <p>21 to the Appendix A, you can click a hyperlink</p> <p>22 and it will take you right to the citation in</p> <p>23 the Code of Federal Regulations.</p> <p>24 Q. What I'm trying to identify are</p>	<p>1 finish his answer.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. You can finish your answer, but</p> <p>4 I need you to just answer my questions or</p> <p>5 we'll be here forever.</p> <p>6 My question simply was: Did you</p> <p>7 use the Code of Federal Regulations? Finish</p> <p>8 your answer, and then I'll ask another</p> <p>9 question, but I want to try to move this</p> <p>10 along.</p> <p>11 MS. O'DELL: He's answering the</p> <p>12 question. Answer it fully.</p> <p>13 A. I've got all day, so we -- we</p> <p>14 can be here as long as we need to.</p> <p>15 MS. O'DELL: We're going to be</p> <p>16 here for seven hours on the record, but</p> <p>17 keep -- you may answer his question.</p> <p>18 A. So all these things are</p> <p>19 considered by a scientist when creating a</p> <p>20 product, and that includes looking at what</p> <p>21 the government says is allowed to be used,</p> <p>22 how it can be used, what kind of products it</p> <p>23 can be used in, how much it can be used for</p> <p>24 which given route of administration. And</p>
Page 151	Page 153
<p>1 just the regulations or databases that you're</p> <p>2 relying on with respect to regulatory</p> <p>3 concern. So, No. 1, you looked at Code of</p> <p>4 Federal Regulations, Title 21. Is that</p> <p>5 right?</p> <p>6 A. Yeah.</p> <p>7 Q. And one of the reasons that you</p> <p>8 list for various fragrance chemicals is that</p> <p>9 the chemical is not listed in Code of Federal</p> <p>10 Regulations, Title 21. Is that right?</p> <p>11 A. That's right. And the reason</p> <p>12 for that is when formulation scientists,</p> <p>13 whether they be a cosmetic chemist, a food</p> <p>14 scientist, or a pharmaceutical scientist, is</p> <p>15 going to create a product, use those that are</p> <p>16 approved. And one of the first places you</p> <p>17 look is the Code of Federal Regulations on</p> <p>18 how they can be used, what they can be used</p> <p>19 in, and how much they can be used for a given</p> <p>20 route of administration. Now you start</p> <p>21 looking at some of these other regulatory</p> <p>22 bodies for specifications. So this --</p> <p>23 Q. Doctor --</p> <p>24 MS. O'DELL: Excuse me. Let him</p>	<p>1 then you go and start looking below that at</p> <p>2 the regulatory bodies in the world of</p> <p>3 cosmetics. That includes CIR and IFRA -- or</p> <p>4 the Food Chemicals Codex if it's something</p> <p>5 used in foods, or the pharmacopeias, if</p> <p>6 there's a standard for that.</p> <p>7 So, you know, when I'm hired to</p> <p>8 help create a product, these are all things</p> <p>9 that we consider when we build it.</p> <p>10 MR. ZELLERS: Move to strike as</p> <p>11 nonresponsive.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. To what section of CFR Title 21</p> <p>14 are you referring to?</p> <p>15 A. I'm sorry? You're asking me</p> <p>16 which section?</p> <p>17 Q. Yes. Which -- CFR Title 21 is</p> <p>18 big. Right?</p> <p>19 A. Yeah.</p> <p>20 Q. What section did you look at in</p> <p>21 terms of your analysis in this case in</p> <p>22 determining that the absence of a listing of</p> <p>23 a fragrance chemical in CFR Title 21 is a</p> <p>24 regulatory concern?</p>

Michael Crowley, Ph.D.

Page 154	Page 156
<p>1 A. So if you go to the government's 2 website, you can pull up Part 21 of the Code 3 of Federal Regulations, and you can type in 4 something and search for it. So I searched 5 for the whole thing. 6 Generally speaking, GRAS-listed 7 chemicals are -- have a little monograph 8 there or a section or code. I looked in the 9 entirety of Title 21, which covers food, 10 drugs, and cosmetics. 11 Q. Do all fragrance chemicals in 12 the United States need to be listed in Code 13 of Federal Regulations, Title 21? 14 A. No. 15 MS. O'DELL: Object to the form. 16 BY MR. ZELLERS: 17 Q. Why does not being listed in CFR 18 Title 21 present a regulatory concern? 19 A. It means the FDA has not 20 reviewed the data on it. 21 Q. One way or the other. Correct? 22 A. Correct. 23 Q. Look at -- strike that. 24 You also identify as a</p>	<p>1 ingredients may be excluded from evaluation 2 by the CIR expert panel if their safety is 3 being determined by the Research Institute 4 for Fragrance Materials? 5 A. Yes. 6 Q. So the CIR may not even review 7 fragrance chemicals if RIFM -- 8 A. And REXPAN have done that. 9 Q. Have done that. Is that right? 10 A. Yeah, that's correct. 11 Q. Why, then, is -- if a fragrance 12 chemical is not listed in CIR, why does that 13 present a regulatory concern? 14 A. Because some of the chemicals 15 are not fragrances. 16 Q. Do you identify which chemicals 17 are not fragrances in your report? 18 A. Yes. 19 Q. Take a look at IFRA. You list 20 as an additional reason in Table 6 for 21 regulatory concern if there is no IFRA -- and 22 IFRA is International Fragrance Association. 23 Is that right? 24 MS. O'DELL: Object to the form.</p>
Page 155	Page 157
<p>1 regulatory concern if a fragrance chemical is 2 not listed by CIR, the Cosmetic Ingredient 3 Review. Is that right? 4 A. Yes. 5 Q. Are you familiar with CIR's 6 review procedures? 7 A. I have read about them, yeah. 8 (Exhibit No. 17 marked) 9 BY MR. ZELLERS: 10 Q. Deposition Exhibit 17. Are 11 these the Cosmetic Ingredient Review 12 procedures that you reviewed in connection 13 with your analysis of this matter? 14 MS. O'DELL: Object to form. 15 A. I don't know. 16 BY MR. ZELLERS: 17 Q. Are you familiar with these 18 procedures? 19 A. I believe I've read a few 20 articles that have been published about the 21 CIR QRA system and so forth, but I don't know 22 that I've reviewed this specific document, to 23 be candid with you. 24 Q. Do you agree that fragrance</p>	<p>1 A. International -- I have the name 2 of IFRA in my report. I think you got it 3 right. International Fragrance -- is it 4 Research Association? 5 BY MR. ZELLERS: 6 Q. Well, whether it's International 7 Fragrance Research Association or 8 International Fragrance Association, we both 9 know what -- 10 A. IFRA is, yes. 11 Q. -- IFRA is. Is that right? 12 A. I think -- I think we can agree 13 upon that, yeah. 14 Q. IFRA makes usage standards for 15 fragrance chemicals. Is that right? 16 A. I think they also make purity 17 standards as well. 18 Q. Is that a yes? 19 A. Yes. Sorry about that. 20 Q. It's okay. 21 (Exhibit No. 18 marked) 22 BY MR. ZELLERS: 23 Q. Deposition Exhibit 18. 24 Deposition Exhibit 18, if you look at the</p>

40 (Pages 154 to 157)



Michael Crowley, Ph.D.

<p style="text-align: right;">Page 158</p> <p>1 second paragraph, are those the standards for 2 the IFRA expert panel? 3 MS. O'DELL: I just object to 4 this exhibit to the degree it seems to 5 be an incomplete copy of whatever is 6 being presented. 7 BY MR. ZELLERS: 8 Q. The top of the document, 9 Exhibit 18, says, "about the standards - 10 IFRA, International Fragrance Association," 11 and at the bottom there's a citation to the 12 IFRA website. Is that right? 13 A. Yes. 14 MS. O'DELL: I stand on my 15 objection of the document itself. 16 BY MR. ZELLERS: 17 Q. In order for IFRA -- let me 18 withdraw that. 19 To make usage standards, there 20 is an independent expert panel that performs 21 a safety assessment for and as part of IFRA. 22 Correct? 23 A. Yeah, that's correct. 24 Q. And if the safety assessment</p>	<p style="text-align: right;">Page 160</p> <p>1 And if you need to read the document 2 he's referring to, feel free to do 3 that. 4 A. It says -- reading Item No. 3, 5 it says, "if the safety assessment does not 6 support the current use, the panel instructs 7 IFRA to issue a standard." 8 If you're asking me about that, 9 then that's what it says. That's how they do 10 it. 11 BY MR. ZELLERS: 12 Q. So in your report, when you list 13 "No IFRA standard" next to an ingredient, 14 that actually means that IFRA has neither 15 restricted nor banned the chemical. Correct? 16 A. Not necessarily. They have -- 17 it appeared to me that they have published 18 standards on purity, providing specifications 19 and usage levels, regardless of whether it's 20 restricted or not. They all have -- all the 21 fragrance chemicals that I examined have some 22 sort of usage level. 23 Q. Looking at Deposition 24 Exhibit 18 --</p>
<p style="text-align: right;">Page 159</p> <p>1 does not support the current use of the 2 chemical, the panel instructs IFRA to issue a 3 standard either restricting or banning a 4 material. Is that correct? 5 A. That's what it says. 6 Q. So that means that if the safety 7 assessment does support the current use of a 8 chemical, IFRA does not issue a standard. 9 Correct? 10 MS. O'DELL: Object to the form. 11 A. I'm sorry. Can you repeat the 12 question? 13 BY MR. ZELLERS: 14 Q. Sure. 15 A. It's a little confusing. 16 Q. We started this day today by my 17 telling you not to answer a question you 18 didn't understand. 19 A. Yeah. 20 Q. Do you agree that if the safety 21 assessment by the expert panel supports the 22 current use of a chemical, IFRA does not 23 issue a standard? Correct? 24 MS. O'DELL: Object to the form.</p>	<p style="text-align: right;">Page 161</p> <p>1 A. Yeah. 2 Q. -- this appears to be from the 3 IFRA website. Correct? 4 A. Yeah. 5 Q. This describes how the expert 6 panel is used. Is that right? 7 MS. O'DELL: Objection. 8 A. Yes. 9 BY MR. ZELLERS: 10 Q. The expert panel is made up of 11 renowned independent experts in the fields of 12 dermatology, toxicology, pathology, and 13 environmental sciences. Is that right? 14 MS. O'DELL: Object to form. 15 A. That's what it says. 16 BY MR. ZELLERS: 17 Q. Their role is to evaluate the 18 data on a fragrance ingredient to see if it 19 supports the current use level to make sure 20 that there are no risks for the consumer. In 21 cases where the safety assessment does not 22 support the current use, the panel then 23 instructs IFRA to issue a standard either 24 restricting or banning a material. Did I</p>



Page 162	Page 164
<p>1 read that correctly?</p> <p>2 A. I believe so.</p> <p>3 Q. And that is your understanding</p> <p>4 of how the expert panel is used with respect</p> <p>5 to the IFRA standards.</p> <p>6 A. That's --</p> <p>7 Q. Is that correct?</p> <p>8 A. Yes.</p> <p>9 Q. I'm going to ask you about some</p> <p>10 of the chemicals that you identify in</p> <p>11 Tables 6 and 15 as a regulatory concern.</p> <p>12 No. 1, balsam Peru. Do you see</p> <p>13 that?</p> <p>14 A. Yes.</p> <p>15 Q. Myroxylon pereirae oil, or</p> <p>16 balsam Peru, was on a list of ingredients</p> <p>17 that you reviewed. Is that right?</p> <p>18 A. Yes.</p> <p>19 Q. That is one of the ingredient --</p> <p>20 one of the ingredients that you say is not in</p> <p>21 regulatory compliance. Is that right?</p> <p>22 A. Yes.</p> <p>23 Q. You claim that IFRA prohibits</p> <p>24 its use as a fragrance. Is that right?</p>	<p>1 conjunction with other materials. Is that</p> <p>2 right?</p> <p>3 A. Yes.</p> <p>4 Q. So P means chemicals should not</p> <p>5 be used as a fragrance ingredient. Correct?</p> <p>6 A. Yes.</p> <p>7 Q. R means that IFRA has set a</p> <p>8 limit as to how much of an ingredient should</p> <p>9 be used. Is that right?</p> <p>10 A. Yes.</p> <p>11 Q. Turn to 163, which is on Page 9</p> <p>12 of Deposition Exhibit 19. Do you see that?</p> <p>13 A. No. There's ten pages here, and</p> <p>14 they're numbered 1 through 10.</p> <p>15 Q. Go to Page 9.</p> <p>16 A. Oh. Okay.</p> <p>17 Q. Entry 163 lists Peru balsam</p> <p>18 crude as prohibited. Is that right?</p> <p>19 A. Yes.</p> <p>20 Q. The next line, Entry 164, it</p> <p>21 lists Peru balsam extracts and distillates as</p> <p>22 restricted. Is that right?</p> <p>23 A. Yes.</p> <p>24 Q. Restricted means that IFRA has</p>
Page 163	Page 165
<p>1 A. That's what I found.</p> <p>2 Q. Take a look at the Index of IFRA</p> <p>3 Standards, which we will mark as Deposition</p> <p>4 Exhibit 19.</p> <p>5 (Exhibit No. 19 marked)</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Are you familiar, generally,</p> <p>8 with these standards?</p> <p>9 A. Yes.</p> <p>10 Q. The IFRA recommendations are</p> <p>11 grouped into three categories; P for</p> <p>12 prohibited, R for restricted, and S for</p> <p>13 specified. Is that right?</p> <p>14 A. Yes.</p> <p>15 Q. Prohibited is material should</p> <p>16 not be used as a fragrance ingredient. Is</p> <p>17 that right?</p> <p>18 A. That's what it says, yes.</p> <p>19 Q. R, the use of the material</p> <p>20 should be limited quantitatively?</p> <p>21 A. Yes.</p> <p>22 Q. S for specified, the material</p> <p>23 should only be used if it meets certain</p> <p>24 purity criteria or if it is used in</p>	<p>1 set a level for safe use. Correct?</p> <p>2 A. Restricted means the material</p> <p>3 should be limited quantitatively. That's the</p> <p>4 argument. You've read that to me, and that's</p> <p>5 right there on your own document.</p> <p>6 Q. Exactly. So there is a limit in</p> <p>7 terms of what a level would be for safe use.</p> <p>8 Correct?</p> <p>9 A. You're adding words to the</p> <p>10 definition of what R means. It says, "The</p> <p>11 use of the material should be limited</p> <p>12 quantitatively." I don't hear the words or</p> <p>13 see the words "safe use" there. So you're</p> <p>14 mischaracterizing what R means.</p> <p>15 Q. R means that up to a certain</p> <p>16 limit, it is acceptable to use the chemical</p> <p>17 according to IFRA?</p> <p>18 A. That's correct.</p> <p>19 Q. All right. Do you agree or do</p> <p>20 you know if balsam Peru oil refers to the</p> <p>21 extract or distillate?</p> <p>22 MS. O'DELL: Object to the form.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. And let me withdraw that. Let</p>

Michael Crowley, Ph.D.

Page 166	Page 168
<p>1 me ask a better question.</p> <p>2 Balsam Peru oil refers to the</p> <p>3 extract or distillate. Is that right?</p> <p>4 A. They both have the same CAS</p> <p>5 number. Interesting. I want to go to my</p> <p>6 report and look and see what I wrote, if you</p> <p>7 don't mind, and that's going to take me a</p> <p>8 moment to get there. Let me pull it up on</p> <p>9 the computer. That would be faster.</p> <p>10 Q. Well, here. I can help you, I</p> <p>11 think. Let me give you a document, and if</p> <p>12 you need to look at something else, you can</p> <p>13 look at something else.</p> <p>14 MS. O'DELL: Yeah. Feel free to</p> <p>15 keep --</p> <p>16 THE WITNESS: I'm going to,</p> <p>17 yeah.</p> <p>18 MS. O'DELL: Keep reviewing what</p> <p>19 you'd like to review.</p> <p>20 A. I will tell you what I relied</p> <p>21 upon.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. Well, my question isn't what you</p> <p>24 relied upon. My question is: Do you agree</p>	<p>1 A. Yes.</p> <p>2 Q. The ingredient that you</p> <p>3 reference in your report is Myroxylon</p> <p>4 pereirae oil or balsam Peru oil. Correct?</p> <p>5 A. Yep.</p> <p>6 Q. That is listed by IFRA in its</p> <p>7 standards as a Peru balsam extract and</p> <p>8 distillate. Is that right?</p> <p>9 A. Yes.</p> <p>10 Q. If we look at the IFRA standard,</p> <p>11 Exhibit 19, and we go back to Page 9 of 10,</p> <p>12 Entry 164, Peru balsam extract and distillate</p> <p>13 is a restricted but not prohibited item. Is</p> <p>14 that right?</p> <p>15 A. That's what it says.</p> <p>16 Q. You do not know the level or</p> <p>17 amount or concentration of Peru balsam</p> <p>18 extract and distillate in the baby powder or</p> <p>19 Shower to Shower powder. Is that correct?</p> <p>20 A. I do not --</p> <p>21 MS. O'DELL: Object to the form.</p> <p>22 A. I do not know the amount.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. Take a look at Table 6. You</p>
Page 167	Page 169
<p>1 that the substance that the fragrance</p> <p>2 chemical that you identified is not</p> <p>3 prohibited by IFRA?</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. And I think I can make it easy</p> <p>7 for you.</p> <p>8 A. So the source I relied upon said</p> <p>9 both resins, essential oils, and that was</p> <p>10 TSCA.</p> <p>11 (Exhibit No. 20 marked)</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. Deposition Exhibit 20 --</p> <p>14 MS. O'DELL: Are you referring</p> <p>15 to a particular page in your report?</p> <p>16 A. It's on Page 152.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Deposition Exhibit 20 is the</p> <p>19 IFRA standard --</p> <p>20 A. And that is -- I did look at</p> <p>21 that, yeah.</p> <p>22 Q. Deposition Exhibit 20 is the</p> <p>23 IFRA standard for Peru balsam extracts and</p> <p>24 distillates. Is that right?</p>	<p>1 list a fragrance chemical benzene, ethenyl-.</p> <p>2 A. Uh-huh.</p> <p>3 Q. Is that "yes"?</p> <p>4 A. Yes.</p> <p>5 Q. You claim in your report,</p> <p>6 Table 6, that benzene, ethenyl- is not</p> <p>7 permitted for flavor or fragrance use. Is</p> <p>8 that right?</p> <p>9 A. That's correct.</p> <p>10 Q. What is that opinion based on?</p> <p>11 A. FDA recently delisted it.</p> <p>12 Q. Isn't it true the FDA only</p> <p>13 removed it from its list of approved</p> <p>14 flavorings because companies stopped using it</p> <p>15 as a flavoring, but it is not banned as a</p> <p>16 fragrance?</p> <p>17 MS. O'DELL: Object to the form.</p> <p>18 A. To the best of my knowledge -- I</p> <p>19 mean, I read the same, probably, report that</p> <p>20 you did when FDA removed it. I don't believe</p> <p>21 that it's allowed to be used as a fragrance.</p> <p>22 I also want to go back to the</p> <p>23 Peru balsam. I pulled up the IFRA standard</p> <p>24 that I looked at, and it was described as</p>

43 (Pages 166 to 169)

Michael Crowley, Ph.D.

Page 170	Page 172
<p>1 Peru balsam crude, is listed as prohibited, 2 and the synonyms are the same my -- how do 3 you say it? Myroxylon pereirae? 4 BY MR. ZELLERS: 5 Q. That's absolutely not true, is 6 it? 7 A. I'm looking at it right here. 8 Q. All right. Then let's mark as 9 Deposition Exhibit -- 10 A. It's from the 42nd amendment. 11 Q. And it's your testimony under 12 oath that Peru balsam crude is the same as 13 Myroxylon pereirae oil? Is that your 14 testimony under oath? 15 A. No. That's what I'm telling you 16 I drew the conclusion from. I relied upon 17 that. 18 Q. And what you know is that Peru 19 balsam crude is not the ingredient that is in 20 the baby powder or Shower to Shower powder. 21 Correct? 22 MS. O'DELL: Object to the form. 23 A. I don't know that. 24</p>	<p>1 crude is the same exact CAS number as the 2 oil. Do you see that? So do you now 3 understand how I drew my conclusion? 4 BY MR. ZELLERS: 5 Q. I'm not -- yes. I'm not -- all 6 I care about is that we now have clarified 7 that the fragrance chemical in the baby 8 powder and Shower to Shower powder is the 9 Peru balsam extract and distillate. Correct? 10 MS. O'DELL: Object to the form. 11 A. I'll take your word for it. 12 BY MR. ZELLERS: 13 Q. There is a -- 14 MS. O'DELL: Object to the form. 15 BY MR. ZELLERS: 16 Q. There is a separate substance, 17 which is the Peru balsam crude, which is 18 described in IFRA standard that we've marked 19 as Exhibit 21, and that is the prohibited 20 substance. Correct? 21 A. Yeah, and they're both listed 22 Myroxylon pereirae Klotsch. I mean, those 23 three words appear on both. They have the 24 same CAS number. So if what is being used in</p>
Page 171	Page 173
<p>1 BY MR. ZELLERS: 2 Q. Let me help you. 3 A. Let me -- and let me point you 4 to what I'm looking at, because it also 5 describes it exactly as it was described in 6 what I was given, and it says it's 7 prohibited. Balsam oil Peru -- balsam Peru, 8 Myroxylon pereirae balsam Peru oil. 9 (Exhibit No. 21 marked) 10 BY MR. ZELLERS: 11 Q. Okay. Deposition Exhibit 21 is 12 the IFRA standard for Peru balsam crude. Is 13 that right? 14 A. Yes. 15 Q. Peru balsam crude is -- they 16 give a synonym of exudation of Myroxylon 17 pereirae Klotsch. Is that right? 18 A. Yeah, that's what it says right 19 there. 20 Q. Exudation is different than a 21 extract and distillate. Correct? 22 MS. O'DELL: Object to the form. 23 A. Yeah, so let me just point one 24 thing out to you. The CAS number of the</p>	<p>1 the baby powder is the restricted material 2 instead of the prohibited material, then I'll 3 be happy to update my report. 4 Q. Take a look, then -- so let's go 5 back to my question about benzene, ethenyl- 6 from your report at Table 6, Page 18, and 7 specifically look at Exhibit -- 8 MS. O'DELL: Would you mind just 9 saying that chemical again, because I 10 missed it? 11 MR. ZELLERS: Sure. Benzene, 12 ethenyl-, E-T-H-Y -- 13 MS. O'DELL: I got it. 14 MR. ZELLERS: -- or maybe 15 E-N-Y-L. 16 MS. O'DELL: Thank you. 17 (Exhibit No. 22 marked) 18 BY MR. ZELLERS: 19 Q. Deposition Exhibit 22, this is 20 the FDA's announcement as to the reason that 21 it was removing benzene, ethenyl- from its 22 list of food additives. Is that right? 23 A. That's what it says, yeah. 24 Q. If you --</p>

44 (Pages 170 to 173)

Michael Crowley, Ph.D.

Page 174	Page 176
<p>1 A. Why don't we call it styrene.</p> <p>2 It's a little bit easier to pronounce.</p> <p>3 Q. If we go to the second page of</p> <p>4 Exhibit 22, the first paragraph, the reason</p> <p>5 the FDA gives for removing styrene as a food</p> <p>6 additive is, "In response to a separate food</p> <p>7 additive petition from the Styrene</p> <p>8 Information and Research Center, the FDA is</p> <p>9 granting the petition by amending its food</p> <p>10 additive regulations to no longer allow for</p> <p>11 the use of styrene as a synthetic flavoring</p> <p>12 substance and adjuvant because industry has</p> <p>13 abandoned this use."</p> <p>14 Is that right?</p> <p>15 A. I believe that you faithfully</p> <p>16 read that.</p> <p>17 Q. Okay. This statement says</p> <p>18 nothing about banning its use as a fragrance.</p> <p>19 Is that right?</p> <p>20 A. That's correct.</p> <p>21 Q. All right. Take a look at your</p> <p>22 report and your reference to diethyl</p> <p>23 phthalate. You identified that as a</p> <p>24 fragrance chemical with a regulatory concern.</p>	<p>1 fragrance ingredient that is included on the</p> <p>2 transparency list is included in the RIFM</p> <p>3 safety assessment program?</p> <p>4 A. I haven't --</p> <p>5 MS. O'DELL: Object to form.</p> <p>6 A. Yeah. I haven't examined the</p> <p>7 transparency list and checked to see if RIFM</p> <p>8 has done a safety assessment on it. So I</p> <p>9 cannot opine or answer your question.</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. If RIFM has done a safety</p> <p>12 assessment on diethyl phthalate, then it</p> <p>13 would be a fragrance. Correct?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. No.</p> <p>16 BY MR. ZELLERS:</p> <p>17 Q. Does RIFM -- well, let me</p> <p>18 withdraw that.</p> <p>19 You list as a reference an</p> <p>20 article on the genotoxicity of phthalate</p> <p>21 esters. Is that right?</p> <p>22 A. Which one are you referring to?</p> <p>23 Q. The Al-Saleh, A-L, hyphen,</p> <p>24 S-A-L-E-H article.</p>
Page 175	Page 177
<p>1 Is that right? And I'm looking at Pages 46</p> <p>2 and 47 of your report, Table 15.</p> <p>3 A. It's not a fragrance chemical.</p> <p>4 Yeah, it's listed there.</p> <p>5 Q. Diethyl phthalate is not a</p> <p>6 fragrance. Is that right?</p> <p>7 A. That's correct.</p> <p>8 Q. For that reason, there is no</p> <p>9 IFRA standard. Is that right?</p> <p>10 A. That would probably be why the</p> <p>11 IFRA folks wouldn't create a standard for it.</p> <p>12 Q. All right. Diethyl phthalate is</p> <p>13 listed on the IFRA transparency list. Is</p> <p>14 that right?</p> <p>15 A. I am not sure. I'd have to</p> <p>16 check that.</p> <p>17 Q. Do you agree that each fragrance</p> <p>18 ingredient that is included on the</p> <p>19 transparency list is included in the RIFM</p> <p>20 safety assessment program?</p> <p>21 MS. O'DELL: Object to form.</p> <p>22 A. I'm sorry. Repeat the question.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. Sure. Do you agree that each</p>	<p>1 MS. O'DELL: Are you referring</p> <p>2 to a particular page in the report?</p> <p>3 MR. ZELLERS: I will. Yeah,</p> <p>4 Page 66.</p> <p>5 MS. O'DELL: Okay. Thank you.</p> <p>6 Page 66 in the report?</p> <p>7 THE WITNESS: Yes. It's the</p> <p>8 first reference.</p> <p>9 MS. O'DELL: Okay.</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. You're generally familiar with</p> <p>12 the paper. Correct?</p> <p>13 A. Yeah. I read -- read and</p> <p>14 reviewed it.</p> <p>15 (Exhibit No. 23 marked)</p> <p>16 Q. Take a look -- is Deposition</p> <p>17 Exhibit 23 that article that you reference in</p> <p>18 your report.</p> <p>19 A. I believe so. Yeah.</p> <p>20 Q. Look at the first page in the</p> <p>21 left column under introduction. Do you see</p> <p>22 at the very bottom, the last full sentence,</p> <p>23 "PAEs, most commonly diethyl phthalate (DEP),</p> <p>24 are also used as solvents and fixatives in</p>

45 (Pages 174 to 177)

Michael Crowley, Ph.D.

<p style="text-align: right;">Page 178</p> <p>1     fragrant products such as perfumes,  2     cosmetics, and personal care products?"  3             Did I read that correctly?  4         A.   Where were you? I --  5         Q.   I'm sorry.  6         A.   Yeah.  7         Q.   I thought we were together.  8         A.   Yeah.  9         Q.   Exhibit 23.  10        A.   Yeah.  11        Q.   Introduction on the right-hand  12        side of the first page.  13        A.   Yeah.  14        Q.   The very last sentence. Do you  15        need me to read it again or --  16        A.   No.  17        Q.   -- did I read that correctly?  18        A.   Yeah, I believe that you used it  19        faithfully.  20        Q.   The authors in this article  21        indicate that diethyl phthalate is a  22        fragrance. Correct?  23        A.   No, they do not.  24        Q.   Tell me how I'm misreading so --</p>	<p style="text-align: right;">Page 180</p> <p>1     sentence, "The oversight of the U.S. Food and  2     Drug Administration" --  3         A.   I'm sorry. Where are you?  4         Q.   Page 2.  5         A.   Yeah.  6         Q.   Exhibit 23.  7         A.   Yeah.  8         Q.   Second sentence, "The  9     oversight" --  10        A.   On the left column?  11        Q.   Yes, on the left column.  12        A.   First paragraph? Okay. "The  13     U.S. Food and Drug Administration" -- okay.  14        Q.   "The oversights of the U.S. Food  15     and Drug Administration (FDA) claim that DEP  16     does not pose a risk to human health."  17        Did I read that correctly?  18        A.   I think so.  19        Q.   Going down and skipping one  20     sentence, but the next sentence states, "The  21     Cosmetic Ingredient Review (CIR) expert  22     panel, an industry-sponsored organization  23     that regularly reviews the safety of  24     cosmetics supported the FDA claim."</p>
<p style="text-align: right;">Page 179</p> <p>1         A.   It's a solvent.  2         Q.   Let's look again at the article  3     that you cited for support. Exhibit 23, last  4     sentence under introduction on the first  5     page, "PAEs, most commonly diethyl phthalate,  6     or DEP, are also used as solvents and  7     fixatives in fragrant products such as  8     perfumes, cosmetics, and personal care  9     products."  10        Did I read it correctly?  11        A.   Yes.  12        Q.   And is that your understanding?  13        A.   Yes. It's a solvent, and a  14     solvent and a fragrance are two different  15     things. So phthalate esters, PAEs, and  16     diethyl phthalate do not have a fragrant odor  17     associated with them. They are solvents for  18     the fragrances.  19        Q.   They are used in personal care  20     products. Is that right?  21        A.   That's what it says, yeah.  22        Q.   According to the article that  23     you have cited -- and I'm looking at the next  24     page of the introduction, the second</p>	<p style="text-align: right;">Page 181</p> <p>1             Did I read that correctly?  2         A.   Yes.  3             MS. O'DELL: Object to the form  4     to the extent you left out a portion of  5     that paragraph, but --  6             MR. ZELLERS: What did I  7     leave -- I left out the cite to the  8     website. Is that right?  9             MS. O'DELL: No. Actually, you  10    left out a sentence, but, you know,  11    keep going.  12            MR. ZELLERS: I don't believe I  13    left out anything material.  14    BY MR. ZELLERS:  15        Q.   The next sentence, "The CIR  16    panel reaffirmed the safe use of DEP, DMP,  17    and DBP in cosmetics in 2005."  18        Is that right?  19            MS. O'DELL: Object to the form.  20        A.   Yeah, that's what it says.  21    BY MR. ZELLERS:  22        Q.   Okay. Going to the next  23    paragraph, "The Scientific Committee on  24    Cosmetics Products and Non-Food Products,</p>

46 (Pages 178 to 181)



<p style="text-align: right;">Page 182</p> <p>1     however, did not recommend restrictions on</p> <p>2     the use of DEP and DMP in cosmetics."</p> <p>3             Is that right?</p> <p>4             MS. O'DELL: Objection; form.</p> <p>5             A.    That's what it says. And let's</p> <p>6     just get something sorted out, because you</p> <p>7     can read this to me and cite all these</p> <p>8     regulatory bodies. Diethyl phthalate is not</p> <p>9     approved for vaginal administration, nor did</p> <p>10    I find, you know, any safety studies done by</p> <p>11    any of those bodies that demonstrated that</p> <p>12    DEP is safe for administration to the vagina.</p> <p>13             So, you know, earlier you talked</p> <p>14    about risk assessments. It seems to me you</p> <p>15    want to ignore route of administration and</p> <p>16    exposure. These are all for cosmetic use,</p> <p>17    which is topical to the skin. This speaks</p> <p>18    nothing to vaginal administration.</p> <p>19             MR. ZELLERS: Move to strike as</p> <p>20    nonresponsive.</p> <p>21    BY MR. ZELLERS:</p> <p>22             Q.    What evidence are you relying on</p> <p>23    to say that this chemical, diethyl phthalate,</p> <p>24    causes or increases the risk of ovarian</p>	<p style="text-align: right;">Page 184</p> <p>1     induced sister chromatid exchanges." Okay?</p> <p>2     "And the NTP program also stated" -- and this</p> <p>3     is a quote -- "there was equivocal evidence</p> <p>4     of carcinogenic activity of diethyl phthalate</p> <p>5     in male and female mice based on increases --</p> <p>6     increased incidences of hepatocellular</p> <p>7     neoplasms, primarily adenomas," so --</p> <p>8             MR. ZELLERS: Move to strike as</p> <p>9     nonresponsive.</p> <p>10    A.    You asked me about human.</p> <p>11    Right?</p> <p>12    BY MR. ZELLERS:</p> <p>13             Q.    Yes.</p> <p>14             A.    That's the basis for -- from</p> <p>15    which the information I relied upon, so --</p> <p>16    you can pick human, but there's animal data</p> <p>17    that suggests this is a problem.</p> <p>18             Q.    Just to be clear --</p> <p>19             MS. O'DELL: Excuse me, sir.</p> <p>20             Have you not -- if you're finished,</p> <p>21             fine, but if you're not finished, you</p> <p>22             may finish your answer.</p> <p>23    BY MR. ZELLERS:</p> <p>24             Q.    Just to be clear, and so we have</p>
<p style="text-align: right;">Page 183</p> <p>1     cancer in humans?</p> <p>2             MS. O'DELL: Object to the form.</p> <p>3             A.    Let me go to my report.</p> <p>4    BY MR. ZELLERS:</p> <p>5             Q.    Well, did you -- and you heard</p> <p>6    my question, in humans. Correct? I don't</p> <p>7    need you to read your list of animal studies</p> <p>8    again.</p> <p>9             MS. O'DELL: He can read</p> <p>10    whatever he'd like to in response to</p> <p>11    your question, Counsel. You know that.</p> <p>12    So you've asked him a question. It's</p> <p>13    pending. He's going to respond to it.</p> <p>14             MR. ZELLERS: And he needs to</p> <p>15    respond to it. That's my question.</p> <p>16             MS. O'DELL: You may not like</p> <p>17    his response, but he's free to respond</p> <p>18    to it, so --</p> <p>19             A.    RTECS demonstrate -- you know,</p> <p>20    stated -- not me, RTECS -- "Diethyl esters</p> <p>21    can cause reproductive and developmental</p> <p>22    toxicity. The NTP program found that in</p> <p>23    cultured Chinese hamster ovary cells, both</p> <p>24    diethyl phthalate and dimethyl phthalate</p>	<p style="text-align: right;">Page 185</p> <p>1     a clear record, you are referencing animal</p> <p>2     studies. Correct?</p> <p>3             A.    Yeah.</p> <p>4             Q.    My question is: Are you aware</p> <p>5    of any human studies that demonstrate or</p> <p>6    provide data that diethyl phthalate causes</p> <p>7    ovarian cancer in humans?</p> <p>8             A.    No, I'm not. And, you know, as</p> <p>9    I was saying, there's also not any studies</p> <p>10   demonstrating the safety in vaginal</p> <p>11   administration.</p> <p>12             Q.    Let me ask you about a couple</p> <p>13   more, and then we'll take a break.</p> <p>14             A.    Okay.</p> <p>15             Q.    Citrus Medica Limonum, Pages 18</p> <p>16   and 19, Table 6. Do you see that?</p> <p>17             A.    There's Citrus Medica Limonum,</p> <p>18   lemon peel oil, yeah.</p> <p>19             Q.    Yes. And you list that as a</p> <p>20   fragrance with a regulatory concern. Is that</p> <p>21   right?</p> <p>22             A.    Yes.</p> <p>23             Q.    You also list this as a</p> <p>24   fragrance chemical as one with IFRA critical</p>



Michael Crowley, Ph.D.

Page 186	Page 188
<p>1 effects. Is that right?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 BY MR. ZELLERS:</p> <p>4 Q. On Page 11 -- I'm sorry.</p> <p>5 Page 37, Table 11.</p> <p>6 A. Yeah, phototoxicity.</p> <p>7 Q. Citrus Medica Limonum is lemon</p> <p>8 peel oil. Is that right?</p> <p>9 A. Yes, that's my understanding.</p> <p>10 Q. Citrus Medica Limonum is listed</p> <p>11 on the IFRA transparency list. Correct?</p> <p>12 A. I would have to check it.</p> <p>13 Q. We discussed before that CIR</p> <p>14 does not evaluate fragrances. Is that right?</p> <p>15 MS. O'DELL: Object to the form.</p> <p>16 A. They do in some cases, but they</p> <p>17 don't always. That's my understanding.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. Would you agree that the absence</p> <p>20 of an evaluation by CIR is not a regulatory</p> <p>21 concern?</p> <p>22 A. So, I mean, let's be clear about</p> <p>23 this. When companies engage me to help them</p> <p>24 build products, they don't want me to take</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. Therefore, the absence of an</p> <p>3 evaluation by CIR, that fact that there is</p> <p>4 not an evaluation by CIR, is not a regulatory</p> <p>5 concern in and of itself. Correct?</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 A. That's a generalization. So</p> <p>8 diethyl phthalate, again, not a fragrance,</p> <p>9 there is a CIR on it. Right? Okay. You</p> <p>10 just pointed to the balsam Peru. That's a</p> <p>11 fragrance. Did CIR have something to say</p> <p>12 about that?</p> <p>13 So the absence of something from</p> <p>14 CIR doesn't mean that, you know -- I forgot</p> <p>15 how you asked your question.</p> <p>16 BY MR. ZELLERS:</p> <p>17 Q. That's all right. The absence</p> <p>18 may or may not be a regulatory concern? Can</p> <p>19 we agree on that?</p> <p>20 A. I guess it depends on who --</p> <p>21 MS. O'DELL: Objection; form.</p> <p>22 A. -- on whose product it is.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. Why would phototoxicity have</p>
Page 187	Page 189
<p>1 any unnecessary risks. Right?</p> <p>2 So, ideally, you use excipients</p> <p>3 and active ingredients that are listed by the</p> <p>4 FDA, have a CIR monograph or safety study,</p> <p>5 you know, are listed in the Food Chemical</p> <p>6 Codex, have a full -- published in a</p> <p>7 peer-reviewed journal safety study.</p> <p>8 So more often than not, the</p> <p>9 generally-accepted standard is to go use</p> <p>10 chemicals that meet all those criteria. So</p> <p>11 there's risk associated with using things</p> <p>12 that don't.</p> <p>13 MR. ZELLERS: Move to strike as</p> <p>14 nonresponsive.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. Try, if you can, to answer my</p> <p>17 question.</p> <p>18 CIR, the Cosmetic Ingredient</p> <p>19 Review, does not evaluate fragrances.</p> <p>20 Correct?</p> <p>21 MS. O'DELL: Object to the form,</p> <p>22 asked and answered.</p> <p>23 A. Yeah. I answered that</p> <p>24 previously and said not always.</p>	<p>1 anything to do with peroneal exposure?</p> <p>2 A. Well, I personally don't sun</p> <p>3 bathe in the nude, but I suppose some people</p> <p>4 do. But sunlight can enter through windows.</p> <p>5 I get your point, taken.</p> <p>6 MS. O'DELL: Hey, Mike, we've</p> <p>7 been going about -- Michael, excuse</p> <p>8 me -- we've been going about an hour</p> <p>9 and 45 minutes, which I think is</p> <p>10 gracious of --</p> <p>11 MR. ZELLERS: If you could give</p> <p>12 me five minutes. I just have one -- I</p> <p>13 mean, and if you have to take a break</p> <p>14 now, then okay.</p> <p>15 MS. O'DELL: I just don't want</p> <p>16 to continue this on -- it's quite a</p> <p>17 long time we've been going. If you've</p> <p>18 got five minutes, please finish.</p> <p>19 MR. ZELLERS: Yeah, let's try to</p> <p>20 finish this section and decide what</p> <p>21 we're going to do.</p> <p>22 MS. O'DELL: But 12:45, an hour</p> <p>23 and 45 minutes in, it's quite a long</p> <p>24 time.</p>

48 (Pages 186 to 189)

Michael Crowley, Ph.D.

Page 190	Page 192
<p>1 MR. ZELLERS: Understood.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. Methyl Hydrogenated Rosinate,</p> <p>4 you list that as a fragrance chemical with a</p> <p>5 regulatory concern. Is that right?</p> <p>6 A. It's not a fragrance chemical.</p> <p>7 It's a chemical.</p> <p>8 Q. So it's your opinion that Methyl</p> <p>9 Hydrogenated Rosinate is not a fragrance. Is</p> <p>10 that right?</p> <p>11 A. That's correct.</p> <p>12 Q. Would you agree that Methyl</p> <p>13 Hydrogenated Rosinate is listed on the IFRA</p> <p>14 transparency list?</p> <p>15 A. I would have to check.</p> <p>16 Q. Do you agree that each fragrance</p> <p>17 ingredient that is included on the IFRA</p> <p>18 transparency list is included in the RIFM</p> <p>19 safety assessment program?</p> <p>20 MS. O'DELL: Object to form.</p> <p>21 A. I think you asked that of me --</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. I did of another chemical --</p> <p>24 another ingredient.</p>	<p>1 THE VIDEOGRAPHER: Going off the</p> <p>2 record, the time is 12:47 p.m.</p> <p>3 (Recess from 12:47 p.m. to</p> <p>4 1:55 p.m.)</p> <p>5 THE VIDEOGRAPHER: This marks</p> <p>6 the beginning of Disc 3. Back on the</p> <p>7 record, the time is 1:55 p.m.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Dr. Crowley, your second opinion</p> <p>10 is that the fragrance chemicals in baby</p> <p>11 powder and Shower to Shower contribute to the</p> <p>12 inflammatory properties, toxicity, and</p> <p>13 potential carcinogenicity of these products.</p> <p>14 Is that right?</p> <p>15 A. Yes.</p> <p>16 Q. In your report, you state that</p> <p>17 35 of the fragrance chemicals in baby powder</p> <p>18 have a safety/toxicology concern. Correct?</p> <p>19 A. 35?</p> <p>20 Q. Yes. Page 11.</p> <p>21 A. 34.</p> <p>22 Q. And 12 of the fragrance</p> <p>23 chemicals in Shower to Shower have a</p> <p>24 safety/toxicology concern. Is that right?</p>
Page 191	Page 193
<p>1 A. Right. I'm sorry. I thought it</p> <p>2 was open-ended. You know, like I said, I</p> <p>3 haven't done that cross-reference, so I would</p> <p>4 have to check that.</p> <p>5 Q. And the same set of questions</p> <p>6 with respect to the CIR not evaluating</p> <p>7 fragrances and not having an evaluation by</p> <p>8 CIR is not a regulatory concern, you'd give</p> <p>9 me all the same answers again?</p> <p>10 A. Pretty much, yeah.</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A. It depends on who is willing to</p> <p>13 take on that risk.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Last question. Not having an</p> <p>16 IFRA standard means that IFRA has neither</p> <p>17 restricted nor banned the chemical. Correct?</p> <p>18 MS. O'DELL: Object to the form.</p> <p>19 A. Well, it could also mean they</p> <p>20 haven't done one, that they haven't done a</p> <p>21 safety assessment.</p> <p>22 MR. ZELLERS: Let's take a</p> <p>23 break.</p> <p>24 THE WITNESS: Okay.</p>	<p>1 A. Yes.</p> <p>2 Q. You define safety/toxicology</p> <p>3 concern as any fragrance chemical that is</p> <p>4 listed on the Registry of Toxic Effects of</p> <p>5 Chemical Substances, or the RTECS list, or</p> <p>6 has safety in use concerns. Is that right?</p> <p>7 MS. O'DELL: Object to the form.</p> <p>8 A. I think I've got a little bit</p> <p>9 broader definition than that. It's really I</p> <p>10 considered the totality of the evidence, so</p> <p>11 certainly RTECS or other toxic, you know,</p> <p>12 reports from the literature.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. You list the fragrance chemicals</p> <p>15 in baby powder, Table 7, that you believe</p> <p>16 have a safety/toxicology concern. Is that</p> <p>17 right?</p> <p>18 A. Well, I don't believe -- I'm</p> <p>19 reporting work that someone else has done.</p> <p>20 Q. Right.</p> <p>21 A. Right.</p> <p>22 Q. As we established earlier, you</p> <p>23 personally did not do the review and</p> <p>24 analysis. You've gone out and you've googled</p>

49 (Pages 190 to 193)

Page 194	Page 196
<p>1 it or you've PubChem'd it to collect that</p> <p>2 information?</p> <p>3 A. Yeah.</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 Misstates his methodology.</p> <p>6 A. I gathered the information from</p> <p>7 a number of sources.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Is safety/toxicology concern a</p> <p>10 recognized term in the field of toxicology?</p> <p>11 A. I mean, it's a term of art, I</p> <p>12 think, that, you know, adequately describes</p> <p>13 what I was asked to do.</p> <p>14 Q. I asked you earlier what</p> <p>15 methodology you followed. The methodology</p> <p>16 you followed for your second opinion is the</p> <p>17 methodology you described for us earlier.</p> <p>18 Correct?</p> <p>19 A. Yes.</p> <p>20 Q. You are not rendering an opinion</p> <p>21 that if a fragrance chemical is included in</p> <p>22 either Table 7 or Table 16 of your report,</p> <p>23 that that means it causes cancer in humans.</p> <p>24 Correct?</p>	<p>1 That's a different question than you</p> <p>2 asked before. You're welcome to answer</p> <p>3 it.</p> <p>4 A. Not in humans, but we have</p> <p>5 in vitro studies and animal studies.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Is there any epidemiology</p> <p>8 substantiating the theory that any of the</p> <p>9 fragrance chemicals used in baby powder or</p> <p>10 Shower to Shower cause cancer in humans?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A. I think that's the same question</p> <p>13 you just asked, so it's the same answer.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. No. Correct?</p> <p>16 MS. O'DELL: Object to the form.</p> <p>17 A. No, that's not my answer. Not</p> <p>18 in humans. There are animal and in vitro</p> <p>19 studies.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. You are not aware of any</p> <p>22 epidemiologic studies that establish that any</p> <p>23 of the fragrance ingredients that you've</p> <p>24 listed out cause cancer in humans. Correct?</p>
Page 195	Page 197
<p>1 MS. O'DELL: Object to the form.</p> <p>2 A. That's not necessarily true.</p> <p>3 BY MR. ZELLERS:</p> <p>4 Q. That's not --</p> <p>5 A. I mean, this isn't a yes or no</p> <p>6 question. As I understand your question, a</p> <p>7 number of these chemicals have validated</p> <p>8 studies that they are carcinogens.</p> <p>9 Q. What epidemiologic studies in</p> <p>10 humans substantiate the theory that the</p> <p>11 fragrance chemicals included in Table 7 and</p> <p>12 Table 16 cause ovarian cancer?</p> <p>13 A. Well, I read to you some studies</p> <p>14 previously. You just rephrased your question</p> <p>15 to human studies and ovarian cancer. You</p> <p>16 know, your question prior to that was not</p> <p>17 specific to ovarian. It was just cancer.</p> <p>18 Limonene is an IARC potential carcinogen.</p> <p>19 You know, we've talked about styrene.</p> <p>20 Q. And I'm sorry to interrupt you.</p> <p>21 My question is: Are you aware of any</p> <p>22 epidemiologic studies that associate those</p> <p>23 fragrances to ovarian cancer in humans?</p> <p>24 MS. O'DELL: Object to the form.</p>	<p>1 MS. O'DELL: Object to the form.</p> <p>2 And if you need to, you're welcome to</p> <p>3 look at the real-time if you need to</p> <p>4 look at the question.</p> <p>5 A. Okay. So that was -- your last</p> <p>6 question was not specific to ovarian cancer.</p> <p>7 You said cancer in humans. So I'd like to</p> <p>8 answer that.</p> <p>9 Four chemicals in the baby</p> <p>10 powder have been identified by the</p> <p>11 International Agency for Research on Cancer</p> <p>12 as potential carcinogens. Benzene, ethenyl-,</p> <p>13 also known as styrene, has been implicated as</p> <p>14 a reproductive toxicant, neurotoxicant, and</p> <p>15 has been demonstrated to be a carcinogen both</p> <p>16 in vivo and in vitro.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Is that a human study?</p> <p>19 A. I would have to check the</p> <p>20 underlying studies.</p> <p>21 The National Toxicology Program</p> <p>22 considers styrene to be reasonably</p> <p>23 anticipated to be a human carcinogen. EPA</p> <p>24 considers para-Cresol to be possibly</p>

Page 198	Page 200
<p>1 carcinogenic.</p> <p>2 IARC has also stated that</p> <p>3 coumarin, eugenol, and d-Limonene are not</p> <p>4 classifiable as to their carcinogenicity.</p> <p>5 Q. We --</p> <p>6 A. The --</p> <p>7 Q. And I'm sorry. You're referring</p> <p>8 to IARC and to its various analyses. Is that</p> <p>9 correct?</p> <p>10 A. That's correct.</p> <p>11 Q. And I'm going to ask you about</p> <p>12 that in a bit.</p> <p>13 A. Okay.</p> <p>14 Q. All right.</p> <p>15 A. And I haven't answered your</p> <p>16 question with respect to Shower to Shower,</p> <p>17 but there's also similar verbiage, as you're</p> <p>18 well aware, with respect to Shower to Shower.</p> <p>19 The chemicals there include benzophenone,</p> <p>20 which is an IARC Group 2B, coumarin and</p> <p>21 eugenol are not classifiable, and musk ketone</p> <p>22 has been suspected of being a carcinogen. It</p> <p>23 has been classified as a Category 3</p> <p>24 carcinogen by SCHER, which is the European</p>	<p>1 products present a health risk for women that</p> <p>2 use the products? And by "products," I'm</p> <p>3 including baby powder and Shower to Shower.</p> <p>4 Is that right?</p> <p>5 A. Yeah. I believe that peroneal</p> <p>6 application of the talc products is</p> <p>7 associated with a higher risk of cancer.</p> <p>8 Q. You have --</p> <p>9 A. And I believe that the fragrance</p> <p>10 chemicals, as they are so called by Johnson &amp;</p> <p>11 Johnson -- that's not my choice of words, but</p> <p>12 they're chemicals -- contribute to that.</p> <p>13 Q. You have not done a full human</p> <p>14 health risk assessment, correct, as we</p> <p>15 discussed earlier today?</p> <p>16 A. I --</p> <p>17 MS. O'DELL: Object to form.</p> <p>18 A. I was unable to do a risk</p> <p>19 assessment because I was never provided with</p> <p>20 the composition of the fragrances. So, in</p> <p>21 order to do that, you need that information.</p> <p>22 It was asked for, and it was never provided.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. You have not been able to do a</p>
Page 199	Page 201
<p>1 folks.</p> <p>2 Q. To be clear -- and I understand</p> <p>3 this is a different question, but there are</p> <p>4 no epidemiologic studies which substantiate</p> <p>5 the theory that the fragrance chemicals that</p> <p>6 you include in either Table 7 or Table 16</p> <p>7 cause or increase the risk of ovarian cancer</p> <p>8 in humans. Correct?</p> <p>9 MS. O'DELL: Object to form.</p> <p>10 A. I would have to check that, but,</p> <p>11 you know, I wasn't asked to consider that,</p> <p>12 so --</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. At least as you sit here, you</p> <p>15 are not aware of any. Correct?</p> <p>16 A. I am not aware of an</p> <p>17 epidemiological study substantiating the</p> <p>18 causation of ovarian cancer from the</p> <p>19 so-called fragrance chemicals. Let's just</p> <p>20 call them chemicals, because not all of them</p> <p>21 are fragrances.</p> <p>22 Q. You believe that the use of the</p> <p>23 chemicals, including fragrance chemicals,</p> <p>24 that you've listed in Tables 7 and 16 in the</p>	<p>1 dose response analysis. Correct?</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A. Again, I couldn't do it because</p> <p>4 I didn't have the information from J&amp;J, I</p> <p>5 suppose, to enable doing that.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. What dose of the chemicals</p> <p>8 listed in Table 7 and 16 does a woman receive</p> <p>9 from one application of baby powder in her</p> <p>10 peroneal region?</p> <p>11 A. It's unknown to me. That</p> <p>12 information was requested and not provided.</p> <p>13 Q. If I asked you what dose there</p> <p>14 would be for two applications or five or any</p> <p>15 number, it --</p> <p>16 A. I couldn't answer.</p> <p>17 MS. O'DELL: Object to the form.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. Do you have any information or</p> <p>20 are you able to tell me the cumulative dose</p> <p>21 that a woman would receive if she used baby</p> <p>22 powder once a day for a year?</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24 A. I don't have the information to</p>

Page 202	Page 204
<p>1 make that judgment. 2 BY MR. ZELLERS: 3 Q. If she used it once a day for 4 five years or ten years? 5 MS. O'DELL: Object to the form. 6 A. Same answer. 7 BY MR. ZELLERS: 8 Q. Are you familiar with the 9 standards released by the Globally Harmonized 10 System of Classification and Labeling of 11 Chemicals, or GHS? 12 A. Yes. 13 Q. You rely on the GHS standards in 14 your report. Is that right? 15 A. Yes. 16 Q. It's true, is it not, that for 17 carcinogens, the GHS does not require a 18 hazard statement regarding an ingredient if 19 that ingredient makes up less than 20 0.1 percent of the entire product? 21 MS. O'DELL: Object to form. 22 A. I'd have to check the GHS 23 standards on that. 24</p>	<p>1 human health if the ingredient represents 2 less than 0.1 percent of the total product 3 other than the genotoxicity issue we talked 4 about earlier? 5 MS. O'DELL: Object to the form. 6 A. Okay. So, as we talked about 7 earlier, genotoxins don't have a threshold. 8 Right? They are -- I'd have to go look at 9 other known carcinogens and what the -- what 10 the -- that are thresholded to answer that 11 question. So it's so open-ended, I couldn't 12 answer without reviewing the literature. 13 BY MR. ZELLERS: 14 Q. One of -- strike that. 15 We talked about exposure and 16 exposure assessments earlier today. Is that 17 right? 18 A. Yes. 19 Q. You've not done an exposure 20 assessment in this case. Right? 21 A. Right. I couldn't because I 22 didn't have the information. 23 Q. Have you ever evaluated a 24 vaginal product?</p>
Page 203	Page 205
<p>1 BY MR. ZELLERS: 2 Q. Take a look at Deposition 3 Exhibit 24. 4 (Exhibit No. 24 marked) 5 BY MR. ZELLERS: 6 Q. Exhibit 24 are the GHS standards 7 of classification and labeling of chemicals. 8 Is that right? 9 A. It's labeled GHS Info Sheet 10 No. 7 on carcinogenicity. 11 Q. All right. If you go to Table 2 12 on Page 2 of Exhibit 24, it provides the 13 cut-off values or concentration limits that 14 trigger the classification of mixtures. 15 A. Okay. 16 Q. Do you see that? 17 A. Yes. 18 Q. And for both Category 1 and 19 Category 2 carcinogens, the cut-off is 20 greater than -- equal to or greater than 21 0.1 percent. Is that right? 22 A. That's what it says. 23 Q. Do you have any science that 24 ingredients can have a critical effect on</p>	<p>1 A. I've developed vaginal products. 2 There's a product called Crinone. It's 3 commercially available. It's a vaginal cream 4 containing progesterone. It's administered 5 to women to prevent them from going into 6 preterm labor. 7 I've also developed vaginal 8 bacteria -- vaginosis and fungal vaginosis 9 products. 10 Q. When did -- which products? 11 A. So the company that makes 12 Thiola, Mission -- I, for God's sake, cannot 13 think of the name of that product right now. 14 It's escaping me. But they have a bacterial 15 vaginosis product that I helped formulate. 16 Q. And you -- 17 A. We also -- 18 Q. Go ahead and finish, please. 19 A. Yeah. There's also a company 20 called Columbia Laboratories. They've been 21 bought and sold I don't know how many times. 22 They're the makers of Crinone. 23 We also looked at other products 24 for them based on the, you know, Crinone drug</p>



Michael Crowley, Ph.D.

Page 206	Page 208
<p>1 delivery system.</p> <p>2 Q. With which company were you</p> <p>3 with?</p> <p>4 A. I was with Mission Pharmacal and</p> <p>5 PharmaForm.</p> <p>6 Q. PharmaForm is the company you</p> <p>7 had a disagreement with. Is that right?</p> <p>8 A. Yeah.</p> <p>9 Q. What, generally, was the</p> <p>10 disagreement?</p> <p>11 A. I was an owner. We sold it.</p> <p>12 Part of the sale was they wanted us to stay</p> <p>13 and run it, and there was an employment</p> <p>14 agreement with -- associated with the sale</p> <p>15 where they would pay out some money over</p> <p>16 time. So, after a couple of years, they</p> <p>17 didn't want to pay.</p> <p>18 Q. In order for a fragrance</p> <p>19 chemical or a chemical to get from the</p> <p>20 peroneal region to the ovaries, they have to</p> <p>21 get past a number of other structures. Is</p> <p>22 that right?</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24 A. I -- I will defer to the other</p>	<p>1 A. I would.</p> <p>2 Q. -- in terms of that?</p> <p>3 A. Yeah.</p> <p>4 THE REPORTER: Try to let him</p> <p>5 finish his question for me, please.</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. Do you know whether or not the</p> <p>8 cervix is more or less sensitive than the</p> <p>9 ovaries to the impact of foreign particles?</p> <p>10 MS. O'DELL: Object to the form.</p> <p>11 A. I do not know.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. You're expressing no opinions</p> <p>14 and have not considered inhalation exposure.</p> <p>15 Correct?</p> <p>16 A. I am not --</p> <p>17 MS. O'DELL: Object to the form.</p> <p>18 A. Yeah, I am not opining on</p> <p>19 inhalation.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. In Section 3.9 of your report,</p> <p>22 you identify a number of components or</p> <p>23 ingredients for which IREF -- strike that --</p> <p>24 IFRA has developed an exposure limit. Is</p>
Page 207	Page 209
<p>1 experts to opine on that matter.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. The female reproductive system</p> <p>4 has a number of defense mechanisms that</p> <p>5 prevent most foreign particles from getting</p> <p>6 from the peroneal region to the ovaries.</p> <p>7 MS. O'DELL: Object --</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Is that your understanding?</p> <p>10 MS. O'DELL: Object to the form.</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. Or do you defer to other experts</p> <p>13 on that?</p> <p>14 A. I think I'll defer to other</p> <p>15 experts there.</p> <p>16 Q. Have you done any testing to</p> <p>17 quantify the difference between the dose</p> <p>18 applied to the peroneal region and the dose</p> <p>19 that would reach the ovaries, assuming that</p> <p>20 baby powder or Shower to Shower powder can</p> <p>21 reach the ovaries?</p> <p>22 A. No, I have not.</p> <p>23 Q. You would defer to other</p> <p>24 experts --</p>	<p>1 that right?</p> <p>2 A. Which page? Table 13 on</p> <p>3 Page 41?</p> <p>4 Q. Yes.</p> <p>5 A. Yeah, some of these are older</p> <p>6 standards that -- you know, they've -- IFRA's</p> <p>7 has moved to this QRA. So some of them have</p> <p>8 been replaced by QRAs, but these are -- some</p> <p>9 of these are historical.</p> <p>10 Q. Looking at Page 39, the</p> <p>11 restriction means that IFRA has recommended</p> <p>12 that exposure to the ingredient be limited to</p> <p>13 a specific dose or amount. Is that right?</p> <p>14 A. Category 5 restriction is</p> <p>15 defined in my report, yeah.</p> <p>16 Q. Is that correct?</p> <p>17 A. Yeah. I mean, there's a</p> <p>18 percentage there that you're not to exceed.</p> <p>19 So that's the limitation.</p> <p>20 Q. Do you have any opinion that the</p> <p>21 amount of these ingredients in baby powder or</p> <p>22 Shower to Shower exceed the IFRA</p> <p>23 recommendations?</p> <p>24 A. I wasn't able to tell because</p>

53 (Pages 206 to 209)



Michael Crowley, Ph.D.

Page 210	Page 212
<p>1 I've never been provided the composition, 2 so -- 3 Q. In their recommendations, does 4 IFRA say that any of these ingredients 5 contribute to ovarian cancer if they exceed 6 the exposure limit? 7 A. I don't believe IFRA stated 8 that. 9 Q. You referred to the RTECS 10 database. Is that right? And I'm looking at 11 your report, Page 21. 12 A. Yes. 13 Q. What does RTECS stand for? 14 A. The Registry of Toxic Effects of 15 Chemical Substances. 16 Q. Do you know who maintains the 17 RTECS database? 18 A. It was initially maintained by 19 the Center for Disease Control, and I believe 20 it's been sold or outlicensed to other 21 companies. 22 Q. There's now a third party 23 contractor that -- 24 A. Yes.</p>	<p>1 A. That's correct. 2 Q. Food additives are listed on 3 RTECS. Is that right? 4 A. Yes. 5 Q. It's your opinion that fragrance 6 chemicals and chemicals in the talc products 7 contribute to the potential carcinogenicity 8 of the products. Is that right? 9 A. That's correct. Several of -- 10 several of the fragrance chemicals are 11 co-carcinogenic, which means they were found 12 to, you know, promote tumors in animals when 13 co-administered with a known carcinogen. 14 Q. Do you agree that it's possible 15 that an ingredient can cause or contribute to 16 the development of one type of cancer but not 17 to another type of cancer? 18 A. Yeah, that's a -- 19 MS. O'DELL: Object to the form. 20 A. That's a true statement. 21 BY MR. ZELLERS: 22 Q. Do you agree that it's possible 23 that an ingredient can cause or contribute to 24 the development of cancer or a cancer in an</p>
Page 211	Page 213
<p>1 Q. -- maintains the RTECS database? 2 A. Yes. 3 Q. Are you familiar with NIOSH, the 4 National Institute for Occupational Safety 5 and Health? 6 A. Yes. 7 Q. Are you aware that NIOSH on its 8 website states that it cannot attest to the 9 accuracy of RTECS? 10 A. No, I wasn't aware of that. 11 Q. Does being on RTECS mean that a 12 chemical is -- strike that. 13 Being listed on RTECS does not 14 mean that a chemical is harmful. Correct? 15 A. Not necessarily. I mean, 16 there's a set of circumstances where it could 17 be and other circumstances it may not be. 18 Q. Being listed on the RTECS 19 database just means that toxicological data 20 that's been published about the ingredient? 21 A. Yes. 22 Q. Prescription and 23 non-prescription drugs are listed on RTECS. 24 Correct?</p>	<p>1 animal but not in humans? 2 A. Yes. 3 Q. Smoking is -- strike that. 4 Smoking is associated with lung 5 cancer. Is that right? If you know. 6 A. Yes. 7 Q. Smoking has not been found to be 8 associated with malignant melanoma. Do you 9 agree? 10 MS. O'DELL: If you know. Don't 11 guess. 12 A. I don't know. My dad has 13 multiple myeloma, and -- and he was a smoker, 14 but I don't know the etiology of -- well, did 15 you say malignant myeloma or -- 16 BY MR. ZELLERS: 17 Q. Malignant melanoma. 18 A. Yeah. I don't know if there's 19 an established connection between smoking and 20 that. 21 Q. You're not an expert in cancer. 22 Correct? 23 A. I would not consider myself to 24 be an expert in cancer.</p>

54 (Pages 210 to 213)

Michael Crowley, Ph.D.

Page 214	Page 216
<p>1 Q. You are not an expert in ovarian 2 cancer. Correct? 3 A. I am not an expert in ovarian 4 cancer. 5 Q. Do you agree that fragrances are 6 generally broken down quickly in the body? 7 MS. O'DELL: Object to the form. 8 A. I don't know that I can agree to 9 a general statement like that. I would have 10 to examine the route of administration. So 11 whether they're applied to the skin or if 12 they're swallowed, as we discussed earlier, 13 the kinetics of how they're metabolized, 14 distributed, and eliminated are a function of 15 those things. 16 BY MR. ZELLERS: 17 Q. Those are all important 18 components. Correct? 19 A. Yes. 20 Q. And you have not done an 21 analysis of that type in this case. Correct? 22 A. That's correct. 23 Q. Do you agree that the primary 24 effects of exposure to fragrance chemicals</p>	<p>1 A. Yeah. I think I answered that I 2 would take that on a case-by-case basis. 3 There could be chronic effects, especially 4 with respect to sensitizers. 5 BY MR. ZELLERS: 6 Q. You have not done that type of 7 analysis at least with respect to any 8 potential relationship between the fragrance 9 chemicals or chemicals you've identified in 10 baby powder or Shower to Shower and ovarian 11 cancer. Correct? 12 MS. O'DELL: Objection to form. 13 A. Well, several of them did have 14 published chronic dosing studies, and I 15 certainly looked at those. No, I have not 16 done a deep-dive analysis on that. 17 BY MR. ZELLERS: 18 Q. What, if anything, does 19 irritation have to do with the development of 20 ovarian cancer? 21 A. Irritation causes an 22 inflammatory response. Inflammatory 23 responses are associated with a higher risk 24 of developing cancers, and specific --</p>
Page 215	Page 217
<p>1 are acute, like headache or skin irritation? 2 MS. O'DELL: Object to the form. 3 A. Again, it's a general statement. 4 You know, my son is allergic to certain 5 fragrance chemicals, and so you can have an 6 allergic response. Right? I think you 7 mentioned irritation and what else? 8 BY MR. ZELLERS: 9 Q. Do you agree that the primary 10 effects of exposure to fragrance chemicals 11 are acute, like headaches or skin irritation? 12 MS. O'DELL: Object to the form. 13 A. You know, I -- 14 BY MR. ZELLERS: 15 Q. Or do you defer on that? 16 A. I think I would do it on a 17 case-by-case basis. I would look at each 18 fragrance chemical and do what I did here. 19 You know, there could be chronic effects from 20 repeat administration. So, no, I wouldn't 21 characterize them as only acute. 22 Q. My question was "are primarily 23 acute." 24 MS. O'DELL: Object to the form.</p>	<p>1 Q. That's a general statement. 2 Correct? 3 A. It is a general statement. But 4 also, with respect to the vagina, insults to 5 the vagina do, in fact, generate certain 6 proteins that are part of the inflammatory 7 response, and those have been positively 8 linked with higher incidences of cancers in 9 the reproduction -- female reproductive 10 organs. 11 Q. Let me go back to my original 12 question. You are not aware of any 13 epidemiologic studies that associate the 14 fragrance chemicals or the chemicals that you 15 identified in Shower to Shower or baby powder 16 with an increased risk of ovarian cancer. 17 Correct? 18 MS. O'DELL: Object to form. 19 BY MR. ZELLERS: 20 Q. In humans. 21 MS. O'DELL: Object to form. 22 A. I mean, you keep tagging on the 23 "in human" part of it. I mean, we have 24 animal studies that show toxicity issues with</p>

55 (Pages 214 to 217)

<p style="text-align: right;">Page 218</p> <p>1 cells in animal models, like Chinese hamster 2 ovary cell models, oocyte degeneration that 3 are associated with female reproductive 4 organs. So, no, not in humans, but we've 5 seen in vitro and in vivo animal studies. 6 BY MR. ZELLERS: 7 Q. Take a look, if you will, at 8 your report, Table 7, Page 21. The first 9 ingredient you list is d-Limonene? 10 A. Limonene, I believe, is how it's 11 pronounced. 12 Q. Limonene? 13 A. Yeah. 14 Q. That's a chemical found in the 15 peels of citrus fruit. Is that right? 16 A. I don't know if it comes from 17 the peels. I read that a while back. I'll 18 take your word for it. I know it's in 19 lemons. I believe it's in oranges, too, and 20 other citrus fruits. 21 And I know that there's a 22 cleanser that's got it in there. 23 Q. I misstated. For our record, 24 it's Page 22 where Table 7 begins.</p>	<p style="text-align: right;">Page 220</p> <p>1 And I'd like to add one quick 2 point. You mentioned the rosin earlier, 3 Methyl Hydrogenated Rosinate. That's glue. 4 It's a film former. It adheres the fragrance 5 chemicals to the talc particles. So where 6 the talc particles go, the fragrance 7 chemicals will go. 8 We have a result here in which 9 d-Limonene was found to be cytotoxic against 10 Chinese hamster ovary cells in which the 11 inhibitory concentration of 50 percent was 50 12 micrograms per mL. That is a very, very low 13 concentration. 14 So, if there was d-Limonene 15 attached to a talc particle with the rosin 16 and that particular talc particle entered the 17 vagina and landed next to an ovary, I think 18 that data strongly suggests that those two 19 materials are not compatible and there would 20 be problems. That study makes it clear and 21 equivocal that d-Limonene is not compatible 22 with Chinese hamster ovary cells. I wouldn't 23 put my daughter's ovary at risk with it. 24</p>
<p style="text-align: right;">Page 219</p> <p>1 A. Oh. 2 Q. Is that right? 3 A. Yeah. 4 Q. d-Limonene is used as both a 5 fragrance and a flavoring. Is that right? 6 A. I believe so. 7 Q. If d-Limonene were associated 8 with the development of ovarian cancer, 9 wouldn't you expect to see higher rates of 10 ovarian cancer among people who handle fruit? 11 MS. O'DELL: Object to the form. 12 MR. ZELLERS: What are you 13 objecting to? That was a good 14 question. 15 A. So again we get to route of 16 exposure. I mean, the presumption is that 17 handling fruit, you know, doesn't transfer 18 the d-Limonene through the skin into the 19 blood and ultimately reach the ovaries. 20 And, you know, this matter -- 21 peroneal application, that's awfully close to 22 the ovaries, and, you know, as I said, I've 23 been asked to assume that it does enter the 24 vaginal cavity.</p>	<p style="text-align: right;">Page 221</p> <p>1 BY MR. ZELLERS: 2 Q. In order to do a proper 3 scientific analysis, you have to make an 4 assessment of concentration. Correct? 5 A. Uh-huh. 6 Q. Yes? 7 A. Yes. 8 MS. O'DELL: Object to form. 9 BY MR. ZELLERS: 10 Q. You have to makes an assessment 11 of dose response. Correct? 12 MS. O'DELL: Object to the form. 13 A. It depends. Again, I keep 14 telling you genotoxic materials -- they are 15 not thresholded. 16 BY MR. ZELLERS: 17 Q. It is -- 18 A. One molecule is enough to cause 19 an increased risk and carcinogenicity. 20 Q. Is d-Limonene a genotoxic 21 material? 22 A. I don't believe it's been 23 classified as that, but cytotoxicity against 24 Chinese hamster ovary cells indicates that it</p>

Michael Crowley, Ph.D.

Page 222	Page 224
<p>1 could be against ovaries, at least in this</p> <p>2 animal model.</p> <p>3 Q. And what --</p> <p>4 A. And you don't do those kind of</p> <p>5 studies against humans. They're unethical.</p> <p>6 Right? So the safety of d-Limonene has not</p> <p>7 been established in human vaginas.</p> <p>8 Q. In order to do a scientific</p> <p>9 study, d-Limonene -- you would need to also</p> <p>10 do an exposure analysis. Correct?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A. Not necessarily.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. You would not need to do an</p> <p>15 exposure analysis in order to lead to a</p> <p>16 scientifically valid conclusion of the effect</p> <p>17 of d-Limonene on a human?</p> <p>18 MS. O'DELL: Object to the form.</p> <p>19 A. You could, but you don't have</p> <p>20 to. What kind of -- I mean, I guess in the</p> <p>21 model that you want to rely upon, it seems to</p> <p>22 be an important fact to you. But the fact is</p> <p>23 it hasn't been done in humans in the vagina.</p> <p>24</p>	<p>1 model you are familiar with to assess the</p> <p>2 risk in humans that does not include any type</p> <p>3 of exposure assessment or analysis?</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. I don't want to sit here and</p> <p>7 have you --</p> <p>8 A. You asked --</p> <p>9 Q. -- internet research --</p> <p>10 A. -- the question. I'm going to</p> <p>11 get you the answer.</p> <p>12 Q. Well, I'm not asking you to do</p> <p>13 internet research. What I'm asking you to</p> <p>14 do --</p> <p>15 A. This isn't -- it's not internet</p> <p>16 research.</p> <p>17 Q. Well, you're doing something on</p> <p>18 your computer.</p> <p>19 A. I'm looking for the name of the</p> <p>20 Klimisch rating --</p> <p>21 Q. Well, I'm okay if you supplement</p> <p>22 your answer later on in the deposition.</p> <p>23 A. Okay. That's fine.</p> <p>24 Q. I just want to --</p>
Page 223	Page 225
<p>1 BY MR. ZELLERS:</p> <p>2 Q. An exposure analysis is an</p> <p>3 important part of a risk assessment.</p> <p>4 Correct?</p> <p>5 MS. O'DELL: Object to the form,</p> <p>6 asked and answered.</p> <p>7 A. You've asked the question. I've</p> <p>8 answered it previously.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. And I'm assuming and recalling</p> <p>11 your answer was "yes." Is that right?</p> <p>12 MS. O'DELL: That's not correct.</p> <p>13 Misstates his testimony.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Is an exposure analysis an</p> <p>16 important part of a risk assessment?</p> <p>17 A. The risk assessment --</p> <p>18 MS. O'DELL: Objection; form.</p> <p>19 A. -- that you presented in one of</p> <p>20 your earlier exhibits says it is, but that's</p> <p>21 not the only risk assessment model that there</p> <p>22 is.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. Tell me what risk assessment</p>	<p>1 MS. O'DELL: Well, and if you</p> <p>2 want to explain what you were doing and</p> <p>3 respond, you're welcome to do that.</p> <p>4 A. Klimisch rating is an evaluation</p> <p>5 approach. It's a systemic approach for</p> <p>6 evaluation of data, and it's got reliability</p> <p>7 categories, so -- and that is a risk</p> <p>8 assessment model.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. That involves no exposure</p> <p>11 assessment. Is that right?</p> <p>12 A. It does not involve an exposure</p> <p>13 assessment.</p> <p>14 Q. Do you know the concentration of</p> <p>15 d-Limonene in either baby powder or Shower to</p> <p>16 Shower?</p> <p>17 A. No.</p> <p>18 MS. O'DELL: Object to the form.</p> <p>19 A. It was not provided to me.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. Similarly, you don't know what</p> <p>22 dose of d-Limonene a woman would be exposed</p> <p>23 to if she utilized either Shower to Shower or</p> <p>24 baby powder. Correct?</p>

57 (Pages 222 to 225)

Michael Crowley, Ph.D.

Page 226	Page 228
<p>1 MS. O'DELL: Object to the form. 2 A. That's right. I wasn't provided 3 with that information. 4 BY MR. ZELLERS: 5 Q. In your list, you give us 6 benzaldehyde? 7 MS. O'DELL: Which list are you 8 referring to? 9 MR. ZELLERS: Page 22, Table 7. 10 MS. O'DELL: Fair enough. I 11 just didn't know -- 12 MR. ZELLERS: That's okay. 13 A. Benzaldehyde. That's correct. 14 BY MR. ZELLERS: 15 Q. Benzaldehyde. Do you know what 16 benzaldehyde is? 17 A. Yes. 18 Q. What is it? 19 A. It's aldehyde of benzene. 20 Q. Artificial almond oil. Correct? 21 A. Yeah. 22 Q. It's used as a fragrance in 23 lotions. Is that right? 24 MS. O'DELL: Object to the form.</p>	<p>1 oppose your motion to strike, and I 2 object to your preamble and to 3 directing the witness to answer a 4 certain way. Dr. Crowley is 5 endeavoring to answer your questions. 6 BY MR. ZELLERS: 7 Q. If -- assuming that benzaldehyde 8 is artificial almond oil and is used as a 9 fragrance in lotions, if it were associated 10 with ovarian cancer, you would expect to see 11 higher rates of ovarian cancer among users of 12 almond-scented lotion. Correct? 13 MS. O'DELL: Object to the form, 14 incomplete hypothetical. 15 A. Not necessarily. 16 BY MR. ZELLERS: 17 Q. Are you aware that benzaldehyde 18 is also used as the flavoring in artificial 19 almond extract? 20 A. No. 21 Q. Assuming that's true, if 22 benzaldehyde were associated with the 23 development of ovarian cancer, wouldn't you 24 expect to see higher rates of ovarian cancer</p>
Page 227	Page 229
<p>1 A. I don't know where it's used or 2 not used. 3 BY MR. ZELLERS: 4 Q. Assuming that it's used as a 5 lotion, lotions are applied topically to the 6 skin. Is that right? 7 MS. O'DELL: Object to the form. 8 A. Generally, yeah. And we keep 9 going down this rabbit hole. Just because 10 you can rub it on the skin or swallow it 11 doesn't mean it's safe for your eyes or, in 12 the case of females, vaginas. 13 BY MR. ZELLERS: 14 Q. At some point Ms. O'Dell is 15 going to have a chance to ask you questions, 16 and you can pontificate as much as you want. 17 I need, right now, if you can, just to try to 18 answer my questions. Okay? 19 MS. O'DELL: He answered your 20 question. 21 MR. ZELLERS: He's not answering 22 my question, and I move to strike as 23 nonresponsive. 24 MS. O'DELL: Fair enough. I</p>	<p>1 among people who use artificial almond 2 extract? 3 MS. O'DELL: Object to the form. 4 A. Again, artificial almond extract 5 is generally eaten. We put it in cookies. 6 We have a cooking -- by the way, I love 7 almond flavor. You know, it's not being 8 applied to the peroneal area, and it's 9 also -- you know, it had to check its 10 permeability and absorption through the skin. 11 Just, you know, sort of blanket 12 statements that are broad like that don't put 13 the analysis that I've done in the proper 14 perspective. 15 BY MR. ZELLERS: 16 Q. Is there -- are you finished? 17 A. Yes. 18 Q. Is there any evidence that 19 exposure to artificial almond extract 20 contributes to the development of ovarian 21 cancer? 22 MS. O'DELL: Object to the form. 23 A. You asked about ovarian cancer. 24</p>

58 (Pages 226 to 229)



Page 230	Page 232
<p>1 BY MR. ZELLERS: 2 Q. Well -- 3 A. Here is what the data that I did 4 find stated, was that there was a positive in 5 sister chromatid exchange, which is 6 genotoxicity, with human lymphocytes from 7 healthy non-smoking donors. It was also 8 found to induce formulation of stable 9 DNA-protein cross-links in cultured human 10 lymphoma cells. That's from TOXNET. 11 Demir -- I don't know how to 12 pronounce it -- Kocaoglu and Kaya reported 13 that it may have significant genotoxic 14 effects. 15 It was cytogenic at 50 nanomoles 16 per liter in 24 hours against Chinese hamster 17 ovary cells. Nanomoles per liter. That's a 18 very low concentration. 19 Sister chromatid exchange in 20 Chinese hamster ovary cells published by 21 Galloway. 22 So again, that's -- that's a 23 direct -- direct evidence of benzaldehyde 24 interacting with a cell, and that's different</p>	<p>1 Q. You have not done an analysis 2 with respect to routes of exposure with 3 regard to benzaldehyde. Correct? 4 MS. O'DELL: Object to the form. 5 A. I did. I did look at all the 6 available information on pharmacokinetics; 7 absorption, distribution, metabolism, and 8 elimination. And -- 9 BY MR. ZELLERS: 10 Q. Where is that in your report? 11 A. It would be in the appendices. 12 Q. All right. 13 A. So the PubChem link, it lists 14 all of that. 15 Q. Do you know -- 16 A. The pharmacologies -- I'm sorry. 17 I wasn't done. 18 Q. All right. Please finish your 19 answer. 20 A. Yeah. The pharmacology for each 21 and every one of those chemicals I looked at 22 in depth. 23 Q. Do you know the concentration of 24 benzaldehyde in baby powder or Shower to</p>
Page 231	Page 233
<p>1 than cells on your tongue, and that's 2 different than cells on your skin. 3 BY MR. ZELLERS: 4 Q. It is not a -- 5 A. So -- 6 Q. I'm sorry. Finish your answer. 7 A. So that's what I'm reporting. 8 And companies that are going to develop 9 products that are intended for topical 10 administration take those kinds of things 11 into consideration. That's why they do eye 12 irritation and eye sens- -- you know, skin 13 sensitization studies. 14 If a product is going to be 15 applied to the peroneal area, companies are 16 going to consider, well, that may enter the 17 anus. It could enter the vagina. What is a 18 potential outcome? 19 Those are standard and typical 20 considerations when companies develop 21 products. 22 Q. Routes of exposure are 23 important. Correct? 24 A. Yes.</p>	<p>1 Shower? 2 A. I think you've asked me this 3 question now at least a half dozen times. I 4 have not been provided with the compositions. 5 Q. The same thing for what dose of 6 this chemical a woman would be exposed to if 7 she used baby powder or Shower to Shower. 8 Correct? 9 MS. O'DELL: Object to the form 10 of that question and the question 11 before. 12 A. Again, that information was 13 requested and was not provided. 14 BY MR. ZELLERS: 15 Q. Looking at Table 7, Pages 21 to 16 26, can you point to any chemical where there 17 is evidence that the chemical contributes to 18 ovarian cancer in humans? 19 MS. O'DELL: Object to the form. 20 A. Give me a minute. 21 para-Cresol. Women exposed in their 22 workplace to varnishes that contained mixed 23 Cresols had increased gynecological problems 24 such as menstrual disorders and hormonal</p>



Michael Crowley, Ph.D.

Page 234	Page 236
<p>1 disturbances. An increased frequency of 2 perinatal mortality and abnormal development 3 of newborn infants was also reported. 4 BY MR. ZELLERS: 5 Q. Do any of those studies relate 6 to or reference an increased risk of ovarian 7 cancer? 8 MS. O'DELL: Object to the form. 9 A. Ovarian cancer in humans or in 10 animals? I feel like -- 11 BY MR. ZELLERS: 12 Q. In humans, yes. 13 A. -- we keep going back and forth 14 here. 15 Q. Let's limit it to humans. 16 A. Pardon me? 17 Q. In humans. 18 MS. O'DELL: Object to the form. 19 A. No, they have not been studied 20 for ovarian cancer in humans. 21 BY MR. ZELLERS: 22 Q. I want to ask you the same 23 question with respect to Shower to Shower. 24 So Table 16, can you point to any chemical</p>	<p>1 your answer? 2 A. Yeah. 3 Q. In your report, you claim that 4 four chemicals in baby powder have been 5 identified by IARC, the International Agency 6 for Research on Cancer, as potential 7 carcinogens. Is that right? And I'm looking 8 at Page 12. 9 A. Yes. 10 Q. You list styrene, d-Limonene, 11 coumarin -- 12 A. Yes. 13 Q. -- and eugenol? 14 A. Yes. 15 Q. You also claim, on Page 12, that 16 three chemicals in Shower to Shower have been 17 identified by IARC as possible carcinogens. 18 Is that right? 19 A. Yes. 20 Q. Benzophenone, coumarin, and 21 eugenol. Is that right? Those are the three 22 that you identified for Shower to Shower? 23 A. Benzophenone, coumarin, and 24 eugenol. I also identified musk ketone.</p>
Page 235	Page 237
<p>1 where there is evidence that the chemical 2 contributes to ovarian cancer in humans? 3 A. A human study? You want to -- 4 Q. Yes. 5 A. You're choosing to ignore all 6 the animal studies and in vitro studies? 7 Just -- 8 Q. I'm not asking -- 9 A. Just so we're clear on that. 10 Q. I'm not looking to argue with 11 you. Okay? I've asked you a question. I'd 12 like you to try to answer to the best of your 13 ability? 14 MS. O'DELL: I will object. I'm 15 going to object to the form of the 16 question and just ask if you would let 17 Dr. Crowley finish. 18 A. Yeah. So you're asking for 19 human studies only. 20 BY MR. ZELLERS: 21 Q. Yes. 22 A. Right? There isn't one because 23 these haven't been studied in human vaginas. 24 Q. In your -- are you finished with</p>	<p>1 That's the Scientific Committee on Health and 2 Environmental Risks in Europe. You also 3 didn't mention para-Cresol, which the EPA 4 considers to be possibly carcinogenic. 5 Q. I'm going to get to musk ketone 6 and para-Caresol -- or Cresol, but right now 7 I want to just limit my questions to the IARC 8 references that you make. 9 A. Okay. 10 Q. Understood? 11 A. Sure. 12 Q. You're familiar with the -- 13 well, and so our record is clear, you 14 identified four chemicals or fragrance 15 chemicals with baby powder that are 16 potentially -- that are potential carcinogens 17 according to IARC. Is that right? Styrene, 18 d-Limonene, coumarin, and eugenol. 19 A. Isn't that the same question you 20 just asked me? 21 Q. Yes, but you then added in musk 22 ketone and para-Cresol. Those two you cite 23 other sources for them being identified as a 24 possible or potential carcinogen. Is that</p>

60 (Pages 234 to 237)

Page 238	Page 240
<p>1 right?</p> <p>2 A. Yes.</p> <p>3 MS. O'DELL: Object to the form.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. I just want, right now, to talk</p> <p>6 about the IARC references that you make.</p> <p>7 You're familiar with the classification</p> <p>8 system that IARC has established. Is that</p> <p>9 right?</p> <p>10 A. Yes.</p> <p>11 Q. Group 4 chemicals are probably</p> <p>12 not carcinogenic to humans. Is that right?</p> <p>13 A. Is that a question?</p> <p>14 Q. Yes.</p> <p>15 A. Yeah, Group 4 is probably not</p> <p>16 carcinogenic to humans.</p> <p>17 Q. Group 3 chemicals are not</p> <p>18 classifiable as to the carcinogenicity to</p> <p>19 humans. Right?</p> <p>20 A. Yes.</p> <p>21 Q. That category is used where the</p> <p>22 evidence of carcinogenicity is inadequate in</p> <p>23 humans and inadequate or limited in</p> <p>24 experimental animals. Correct?</p>	<p>1 on my computer.</p> <p>2 Q. If you look at Deposition</p> <p>3 Exhibit 25, the classification system in the</p> <p>4 preamble, for Group 3, the chemical is not</p> <p>5 classifiable as to its carcinogenicity to</p> <p>6 humans. That's the title of that group. Is</p> <p>7 that right?</p> <p>8 A. That's what it says, "The agent</p> <p>9 is not classifiable as to its carcinogenicity</p> <p>10 to humans."</p> <p>11 Q. The description -- at least the</p> <p>12 first paragraph of the description for</p> <p>13 Group 3, "This category is used most commonly</p> <p>14 for agents for which the evidence of</p> <p>15 carcinogenicity is inadequate in humans and</p> <p>16 inadequate or limited in experimental</p> <p>17 animals."</p> <p>18 Did I read this correctly?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A. Yeah, I believe you read that</p> <p>21 faithfully.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. All right. Group 2B --</p> <p>24 A. Well, wait a minute. You need</p>
Page 239	Page 241
<p>1 A. No. That's only half of it.</p> <p>2 The other part of that is evidence of</p> <p>3 carcinogenicity is inadequate in humans but</p> <p>4 sufficient in experimental animals, but</p> <p>5 strong evidence that the mechanism of</p> <p>6 carcinogenicity in experimental animals may</p> <p>7 not operate in humans, or agents that don't</p> <p>8 fall into any other group.</p> <p>9 (Exhibit No. 25 marked)</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. So we have a clear record,</p> <p>12 Deposition Exhibit 25 is the preamble to the</p> <p>13 IARC monographs on the human evaluation of</p> <p>14 carcinogenic risks to humans. Is that right?</p> <p>15 A. That's what it says.</p> <p>16 MS. O'DELL: You said 25?</p> <p>17 MR. ZELLERS: 25.</p> <p>18 MS. O'DELL: Thank you.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. Are you familiar with this --</p> <p>21 A. I have seen --</p> <p>22 Q. -- preamble?</p> <p>23 A. I have seen this. I also have</p> <p>24 the IARC classifications from their website</p>	<p>1 to read the next paragraph, because that's</p> <p>2 important, in Group 3. "Exceptionally,</p> <p>3 agents for which the evidence of</p> <p>4 carcinogenicity is inadequate in humans but</p> <p>5 sufficient in experimental animals may be</p> <p>6 placed in this category when there is strong</p> <p>7 evidence that the mechanism of</p> <p>8 carcinogenicity in experimental animals does</p> <p>9 not operate in humans."</p> <p>10 Q. Are you done?</p> <p>11 A. So -- yeah.</p> <p>12 Q. Okay.</p> <p>13 A. So --</p> <p>14 Q. I don't want to have a</p> <p>15 discussion -- I mean, I just asked for the</p> <p>16 definition.</p> <p>17 A. Well, your only picking half of</p> <p>18 it is part of the problem.</p> <p>19 Q. Is there anything else you want</p> <p>20 to read into the record for the definition of</p> <p>21 a Group 3 IARC chemical?</p> <p>22 A. Yep.</p> <p>23 Q. Read what you want to read, and</p> <p>24 let's move on.</p>

Page 242	Page 244
<p>1 A. The third part of that is agents</p> <p>2 that don't fall into any other group. Those</p> <p>3 are the three criteria.</p> <p>4 Q. Group 2B under the IARC</p> <p>5 classification is the agent is possibly</p> <p>6 carcinogenic to humans. Is that right?</p> <p>7 A. There's three parts to Group 2B.</p> <p>8 Limited evidence of carcinogenicity in humans</p> <p>9 and less than sufficient evidence of</p> <p>10 carcinogenicity in experimental animals or --</p> <p>11 operative word "or" -- inadequate evidence of</p> <p>12 carcinogenicity in humans but sufficient</p> <p>13 evidence of carcinogenicity in experimental</p> <p>14 animals.</p> <p>15 And Part 3 is also an "or."</p> <p>16 Inadequate evidence of carcinogenicity in</p> <p>17 humans and less than sufficient evidence of</p> <p>18 carcinogenicity in experimental --</p> <p>19 THE REPORTER: I'm sorry. Read</p> <p>20 that -- read that slower again, the</p> <p>21 last --</p> <p>22 THE WITNESS: I'm sorry. I'll</p> <p>23 start it --</p> <p>24 THE REPORTER: "In humans."</p>	<p>1 potential carcinogen is -- strike that.</p> <p>2 The first fragrance chemical</p> <p>3 that you claim IARC has classified as a</p> <p>4 potential carcinogen is styrene. Is that</p> <p>5 right?</p> <p>6 A. Yeah.</p> <p>7 Q. Potential carcinogen is not a</p> <p>8 category recognized by IARC. Is that right?</p> <p>9 A. No. No. They have the</p> <p>10 categories that we --</p> <p>11 Q. What we just talked about?</p> <p>12 A. Yeah.</p> <p>13 Q. Styrene has been classified by</p> <p>14 IARC as a 2B chemical. Is that right?</p> <p>15 A. I believe that's correct. Yeah,</p> <p>16 2B.</p> <p>17 Q. As we discussed, this category</p> <p>18 is used when there is limited evidence of</p> <p>19 carcinogenicity in humans and less than</p> <p>20 sufficient evidence of carcinogenicity in</p> <p>21 experimental animals. Is that right?</p> <p>22 MS. O'DELL: Object to the form.</p> <p>23 A. Again, only partially correct.</p> <p>24 It can also be a circumstance where there's</p>
Page 243	Page 245
<p>1 A. Inadequate evidence of</p> <p>2 carcinogenicity in humans and less than</p> <p>3 sufficient evidence of carcinogenicity in</p> <p>4 experimental animals but with supporting</p> <p>5 evidence from mechanistic and other relevant</p> <p>6 data.</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. Group 2B, the classification by</p> <p>9 IARC, is the agent is possibly carcinogenic</p> <p>10 to humans. Is that right?</p> <p>11 A. Yes.</p> <p>12 Q. Group 2A chemicals are probably</p> <p>13 carcinogenic to humans. Is that right?</p> <p>14 A. Yes.</p> <p>15 Q. Group 1 chemicals are</p> <p>16 carcinogenic to humans. Is that right?</p> <p>17 A. Yes.</p> <p>18 Q. To be clear, none of the</p> <p>19 fragrance chemicals in baby powder or Shower</p> <p>20 to Shower have been classified as a Group 1</p> <p>21 agent by IARC. Is that right?</p> <p>22 A. That's correct.</p> <p>23 Q. The first fragrance chemical</p> <p>24 that you claim IARC has classified as</p>	<p>1 inadequate evidence of carcinogenicity in</p> <p>2 humans but sufficient evidence of</p> <p>3 carcinogenicity in animals.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. Would you agree IARC has not</p> <p>6 concluded that styrene is carcinogenic in</p> <p>7 humans? Correct?</p> <p>8 A. Okay. They've concluded it's in</p> <p>9 Group 2B, which is possible carcinogenic to</p> <p>10 humans.</p> <p>11 And I need to request a break</p> <p>12 because I need to blow my nose.</p> <p>13 MR. ZELLERS: Let's take a</p> <p>14 break.</p> <p>15 THE WITNESS: Is that all right?</p> <p>16 MR. ZELLERS: That's a very</p> <p>17 legitimate reason.</p> <p>18 THE VIDEOGRAPHER: Going off the</p> <p>19 record, the time is 2:53 p.m.</p> <p>20 (Recess from 2:53 p.m. to</p> <p>21 3:05 p.m.)</p> <p>22 THE VIDEOGRAPHER: Back on the</p> <p>23 record, the time is 3:05 p.m.</p> <p>24 (Exhibit No. 26 marked)</p>

Michael Crowley, Ph.D.

Page 246	Page 248
<p>1 BY MR. ZELLERS:</p> <p>2 Q. Dr. Crowley, Deposition</p> <p>3 Exhibit 26 is the IARC monograph with respect</p> <p>4 to styrene. Is that correct?</p> <p>5 A. I think I found more than one of</p> <p>6 them. Which one is this? This is Volume 82?</p> <p>7 Q. Is Exhibit 26 a -- an IARC</p> <p>8 document?</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. I'm going to take your word for</p> <p>11 it, but I can't say with certainty because I</p> <p>12 don't see IARC -- oh, there it is on the</p> <p>13 second page. It says "IARC monograph</p> <p>14 Volume 82." So, yeah, it sure looks like it.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. As we discussed before, an</p> <p>17 ingredient can cause or contribute to the</p> <p>18 development of one type of cancer but not</p> <p>19 another type of cancer. Correct?</p> <p>20 A. Yeah, that's -- that's true.</p> <p>21 Q. Isn't it true that in human</p> <p>22 studies, styrene exposure has only been</p> <p>23 associated with an increased risk in</p> <p>24 lymphatic and hematopoietic neoplasms? And</p>	<p>1 MS. O'DELL: So you do not know</p> <p>2 the year of this publication?</p> <p>3 MR. ZELLERS: I do not know the</p> <p>4 year of this other than I believe it to</p> <p>5 be the most recent IARC monograph with</p> <p>6 respect to styrene. All I can tell you</p> <p>7 is it's after 1994, and it is part of</p> <p>8 the IARC monographs in Volume 82.</p> <p>9 A. So I'm looking at the copy I</p> <p>10 found, and it --</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. Oh, I'm sorry. So I can</p> <p>13 identify Deposition Exhibit 26 as a 2002 IARC</p> <p>14 monograph.</p> <p>15 A. Okay. So this is only part of</p> <p>16 it, because I also considered this particular</p> <p>17 document. It looks to me like you've</p> <p>18 provided me with copies up through 520 --</p> <p>19 Page 522. The actual report I found was 114</p> <p>20 pages long, and it contains -- it goes up to</p> <p>21 Page 550.</p> <p>22 Q. I have just given you, in</p> <p>23 Exhibit 26, excerpts from the monograph. The</p> <p>24 first page of the exhibit was 437. The last</p>
Page 247	Page 249
<p>1 I'm looking at the IARC monograph,</p> <p>2 Exhibit 26, at Page 520.</p> <p>3 MS. O'DELL: Object to the form.</p> <p>4 A. Can you direct me to --</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. Sure.</p> <p>7 A. -- where on Page 520? I'm going</p> <p>8 to trust that you're faithful in reading it</p> <p>9 to me.</p> <p>10 The one thing I'd like to verify</p> <p>11 is there are multiple IARC examinations of</p> <p>12 styrene, so do you know which -- this is from</p> <p>13 Volume 82, but which year is that? Do you</p> <p>14 know?</p> <p>15 Q. Well, looking at the cover page</p> <p>16 of Exhibit 26, the IARC monograph states,</p> <p>17 "This substance was considered by previous</p> <p>18 working groups in 1978, 1987, and 1994.</p> <p>19 Since that time, new data have become</p> <p>20 available, and these have been incorporated</p> <p>21 into the monograph and taken into</p> <p>22 consideration in the present evaluation."</p> <p>23 That's what I know with respect</p> <p>24 to the year.</p>	<p>1 page I provided you was 522, so I will</p> <p>2 acknowledge these are just excerpts --</p> <p>3 A. Okay.</p> <p>4 Q. -- from the monograph.</p> <p>5 MS. O'DELL: Well, fair enough.</p> <p>6 Thank you for acknowledging that. And</p> <p>7 I'll just note for the record, so it's</p> <p>8 clear, Exhibit 26 skips from Page 438</p> <p>9 to 517, and then it's 517 to 522, and</p> <p>10 the remainder is omitted.</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. Doctor, I'm ready to continue.</p> <p>13 Are you ready?</p> <p>14 A. All right.</p> <p>15 Q. I'm pointing you to, in</p> <p>16 Exhibit 26, the section on human</p> <p>17 carcinogenicity data, Section 5.2 that begins</p> <p>18 on Page 518. Do you see that?</p> <p>19 A. Yes.</p> <p>20 Q. Are you aware of any human</p> <p>21 studies associating styrene exposure with an</p> <p>22 increased risk of -- well, let me withdraw</p> <p>23 that question.</p> <p>24 In this section, IARC references</p>

63 (Pages 246 to 249)

Michael Crowley, Ph.D.

Page 250	Page 252
<p>1 a human study relating to an increased risk</p> <p>2 of lymphatic and hematopoietic neoplasm with</p> <p>3 styrene exposure. Is that generally</p> <p>4 accurate?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. I mean, they -- they talk about</p> <p>7 a number of studies. If you go to Page 519,</p> <p>8 the second to last paragraph, "There have</p> <p>9 also been reports of increased risks of</p> <p>10 rectal, pancreatic, and nervous system</p> <p>11 cancers in some of the cohort and</p> <p>12 case-control studies. The numbers of cases</p> <p>13 were quite small in these studies, and most</p> <p>14 of the larger cohort studies have not yielded</p> <p>15 similar findings. Many of the cohort studies</p> <p>16 did not examine these sites in detail."</p> <p>17 So I don't think it's just</p> <p>18 limited to those.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. Let me cut to the chase and ask</p> <p>21 you my question --</p> <p>22 A. Okay.</p> <p>23 Q. -- and then we can hopefully</p> <p>24 move along.</p>	<p>1 It's very fair for -- you've asked him</p> <p>2 does the monograph refer to ovarian</p> <p>3 cancer, and it's very fair for him to</p> <p>4 be able to examine that document and</p> <p>5 answer your question and not rely on</p> <p>6 this truncated, incomplete exhibit.</p> <p>7 MR. ZELLERS: The exhibit I</p> <p>8 provided to him was the summary of data</p> <p>9 reported in evaluation for human</p> <p>10 carcinogenicity data.</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. But my question to you,</p> <p>13 Dr. Crowley, is: Are you aware of any study</p> <p>14 that associates styrene exposure with an</p> <p>15 increased risk of ovarian cancer in humans?</p> <p>16 MS. O'DELL: Object to the form.</p> <p>17 A. No.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. If I ask you the same questions</p> <p>20 as I asked before, you don't know the dose or</p> <p>21 the amount or the concentration of styrene in</p> <p>22 the baby powder or Shower to Shower product.</p> <p>23 Correct?</p> <p>24 MS. O'DELL: Object to the form.</p>
Page 251	Page 253
<p>1 There are no human studies that</p> <p>2 associate styrene exposure with an increased</p> <p>3 risk of ovarian cancer in humans. Is that</p> <p>4 right?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. I'm going to take my new copy,</p> <p>7 and I'm going to do a search.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Again, I'm objecting to you</p> <p>10 doing internet research to try to answer my</p> <p>11 questions.</p> <p>12 MS. O'DELL: Excuse me. He's</p> <p>13 not doing internet research. As he's</p> <p>14 noted to you, that he was provided, in</p> <p>15 Exhibit 26, an incomplete monograph,</p> <p>16 and he has the full monograph before</p> <p>17 him. And so it's very fair to answer</p> <p>18 your question --</p> <p>19 MR. ZELLERS: Ms. O'Dell.</p> <p>20 MS. O'DELL: No, no, no. Let me</p> <p>21 finish.</p> <p>22 MR. ZELLERS: If he is</p> <p>23 referring --</p> <p>24 MS. O'DELL: No. Let me finish.</p>	<p>1 A. Johnson &amp; Johnson did not</p> <p>2 provide that information to enable that kind</p> <p>3 of assessment.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. The same --</p> <p>6 A. It was requested.</p> <p>7 Q. The same statement: You do not</p> <p>8 know the amount of exposure or the duration</p> <p>9 of exposure of any individual in this case.</p> <p>10 Correct?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 A. The same answer: Information</p> <p>13 was requested, and Johnson &amp; Johnson did not</p> <p>14 provide that to enable that kind of analysis.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. Do you agree that the studies --</p> <p>17 the human studies with respect to styrene are</p> <p>18 characterized by IARC as generally small,</p> <p>19 statistically unstable, and often based on</p> <p>20 subgroup analyses?</p> <p>21 MS. O'DELL: Object to the form.</p> <p>22 A. Could you please point me to</p> <p>23 where you read that?</p> <p>24</p>

64 (Pages 250 to 253)



Michael Crowley, Ph.D.

Page 254	Page 256
<p>1 BY MR. ZELLERS:</p> <p>2 Q. Sure. Take a look --</p> <p>3 A. Which page?</p> <p>4 Q. Yes. Page 520. So at the very</p> <p>5 top of 520 -- this, again, is in the section</p> <p>6 on human carcinogenicity data -- IARC states,</p> <p>7 "The increased risks for lymphatic and</p> <p>8 hematopoietic neoplasms observed in some of</p> <p>9 the studies are generally small,</p> <p>10 statistically unstable, and often based on</p> <p>11 subgroup analyses. These findings are not</p> <p>12 very robust."</p> <p>13 Did I read that correctly?</p> <p>14 A. I believe so.</p> <p>15 Q. All right.</p> <p>16 A. I think one other thing we</p> <p>17 should talk about with respect to styrene is</p> <p>18 its metabolite.</p> <p>19 MR. ZELLERS: Doctor, I'm going</p> <p>20 to object because I just need you to</p> <p>21 answer my questions.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. And my question was: Did I read</p> <p>24 that correctly?</p>	<p>1 try to answer my questions as best you can.</p> <p>2 Is it true that in animal</p> <p>3 studies styrene exposure has only been</p> <p>4 associated with an increased incidence of</p> <p>5 pulmonary adenomas and carcinomas in mice?</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 A. Can you please --</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Sure.</p> <p>10 A. -- direct me to where you're --</p> <p>11 Q. Take a look at the IARC</p> <p>12 monograph. I'm now looking at the Section</p> <p>13 5.3, Exhibit 26, Page 520, animal</p> <p>14 carcinogenicity data.</p> <p>15 Do you see that?</p> <p>16 A. Yes. So styrene was tested for</p> <p>17 carcinogenicity in mice in an inhalation</p> <p>18 study and four oral gavage studies. That's</p> <p>19 what you're talking about. Right?</p> <p>20 Q. Yes.</p> <p>21 A. All right.</p> <p>22 Q. It was only associated with an</p> <p>23 increased incidence of pulmonary adenomas and</p> <p>24 carcinomas in mice. Is that right?</p>
Page 255	Page 257
<p>1 A. The answer --</p> <p>2 MS. O'DELL: Object to the form.</p> <p>3 A. Yeah. You did read it</p> <p>4 correctly, but as long as we're talking about</p> <p>5 the safety of styrene in human studies, we</p> <p>6 can't ignore its metabolite.</p> <p>7 Styrene-7,8-oxide has been</p> <p>8 implicated and found to be carcinogenic and</p> <p>9 genotoxic in virtually every study that has</p> <p>10 ever been done with it. Metabolism of</p> <p>11 styrene to those metabolites have also been</p> <p>12 demonstrated both in humans and in animals to</p> <p>13 be carcinogenic.</p> <p>14 So while you're picking and</p> <p>15 choosing certain portions of the IARC</p> <p>16 monograph, let's consider the thing in total,</p> <p>17 all of the evidence.</p> <p>18 MR. ZELLERS: Move to strike as</p> <p>19 nonresponsive.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. I have not -- my question was:</p> <p>22 Did I read that statement correctly from</p> <p>23 IARC? This is not your opportunity to just</p> <p>24 pontificate. I'll move on, but I need you to</p>	<p>1 A. That's what it says. But let's</p> <p>2 also jump down two paragraphs. "Styrene-7,8-</p> <p>3 oxide is a major metabolite of styrene and</p> <p>4 has been previously evaluated by IARC. The</p> <p>5 evaluation at that time was that there was</p> <p>6 sufficient evidence in experimental animals</p> <p>7 for the carcinogenicity of styrene-7,8-</p> <p>8 oxide."</p> <p>9 Q. What is styrene-7,8-oxide?</p> <p>10 A. It's the metabolite. So when</p> <p>11 styrene is absorbed, it's metabolized to the</p> <p>12 7,8-oxide.</p> <p>13 So this is very similar to</p> <p>14 certain drugs. There are drugs called</p> <p>15 prodrugs. The chemical that you swallow has</p> <p>16 zero biological activity. However, once it's</p> <p>17 been metabolized, the metabolite is</p> <p>18 pharmacologically active. That's the case</p> <p>19 here with styrene.</p> <p>20 Q. This is an animal study.</p> <p>21 Correct?</p> <p>22 A. It's an animal study.</p> <p>23 Q. All right. d-Limonene. You</p> <p>24 claim that IARC has identified d-Limonene as</p>

65 (Pages 254 to 257)



Page 258	Page 260
<p>1 a potential carcinogen. Is that right? And</p> <p>2 I'm looking at your report. I believe it was</p> <p>3 Page 12.</p> <p>4 A. Yes.</p> <p>5 Q. d-limonene -- strike that.</p> <p>6 (Exhibit No. 27 marked)</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. Exhibit 27 is again excerpts</p> <p>9 from the IARC monograph on d-Limonene?</p> <p>10 A. I'm going to pull up the entire</p> <p>11 monograph.</p> <p>12 MS. O'DELL: So just for the</p> <p>13 record, Exhibit 27 starts at Page 307</p> <p>14 and goes to 308, then skips to 320</p> <p>15 and --</p> <p>16 MR. ZELLERS: It's just as with</p> <p>17 the styrene monograph. What I have</p> <p>18 done here is to photocopy the sections</p> <p>19 relating to human carcinogenicity data</p> <p>20 and animal carcinogenicity data.</p> <p>21 MS. O'DELL: And feel free to</p> <p>22 look at the whole monograph if you need</p> <p>23 to, Dr. Crowley.</p> <p>24 THE WITNESS: I have it.</p>	<p>1 carcinogenicity is inadequate in humans and</p> <p>2 inadequate or limited in animals, or the</p> <p>3 evidence of carcinogenicity in humans is</p> <p>4 inadequate but sufficient in experimental</p> <p>5 animals with strong evidence that the</p> <p>6 mechanism doesn't relate. That's what the</p> <p>7 classification -- which we've read into the</p> <p>8 record previously.</p> <p>9 Q. The summary of Group 3</p> <p>10 classification by IARC is that the agent is</p> <p>11 not classifiable as to its carcinogenicity to</p> <p>12 humans. Is that right?</p> <p>13 MS. O'DELL: Object to form.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. That is -- I'm reading from</p> <p>16 Exhibit 25.</p> <p>17 A. Yeah. There's three elements</p> <p>18 that go into the group classifications, and</p> <p>19 you're only reading the first one. You're</p> <p>20 not reading all three.</p> <p>21 Q. Now, Doctor, in fairness --</p> <p>22 MS. O'DELL: Let him finish,</p> <p>23 sir.</p> <p>24 A. Excuse me. I wasn't finished.</p>
Page 259	Page 261
<p>1 BY MR. ZELLERS:</p> <p>2 Q. Dr. Crowley, IARC has classified</p> <p>3 d-Limonene as a Group 3 agent. Is that</p> <p>4 right?</p> <p>5 A. I believe that's correct.</p> <p>6 Q. The first sentence, as we read</p> <p>7 before, of the definition of a Group 3</p> <p>8 classification means that the chemical is not</p> <p>9 classifiable as to its carcinogenicity in</p> <p>10 humans. Is that right?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. That's what the Group 3</p> <p>14 classification means?</p> <p>15 A. That's correct, not</p> <p>16 classifiable.</p> <p>17 Q. Do you agree that IARC has not</p> <p>18 identified d-Limonene as a potential</p> <p>19 carcinogen, but really what IARC has done is</p> <p>20 determined there is no adequate evidence to</p> <p>21 say that it is a carcinogen?</p> <p>22 A. I would state that IARC has</p> <p>23 classified it as Group 3, which means there's</p> <p>24 evidence of -- the evidence of</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. You have to answer my question.</p> <p>3 I'm reading the title. Is that right?</p> <p>4 I'm not reading the definitions.</p> <p>5 I'm reading the title. Did I read the title</p> <p>6 correctly?</p> <p>7 A. I think so.</p> <p>8 Q. All right. And I don't mean to</p> <p>9 unnecessarily cut you off, but we have had an</p> <p>10 extensive discussion, both of us, in terms of</p> <p>11 the definitions. Correct?</p> <p>12 A. Right.</p> <p>13 Q. All right.</p> <p>14 A. And we have. And I think that</p> <p>15 it's pretty clear that IARC considers both</p> <p>16 human and animal studies when they come up</p> <p>17 with these classifications.</p> <p>18 Q. Isn't it true that there are no</p> <p>19 human studies linking the use of d-Limonene</p> <p>20 to any type of cancer?</p> <p>21 A. The IARC monograph states that</p> <p>22 there was no data available to the working</p> <p>23 group on studies of cancer in humans with</p> <p>24 d-Limonene. That's correct.</p>

Page 262	Page 264
<p>1 Q. Isn't it also true that in 2 animal studies the only potential association 3 between d-Limonene was found in renal tubular 4 tumors? 5 A. Renal tubular adenomas and 6 carcinomas, but I believe that there was a 7 co-carcinogen effect demonstrated, if my 8 memory is correct, in a lung model. 9 Q. In an animal study. Correct? 10 A. Yeah, that was an animal study. 11 Q. Let me ask you a couple -- 12 A. So -- 13 Q. Are you done? 14 A. I was just going to say, you 15 know, what that means is that if it's present 16 with a known carcinogen, it promotes 17 carcinogenesis. 18 Q. In animals. Correct? Or in 19 the -- in the particular animal study -- 20 A. Yeah, in that particular study. 21 MS. O'DELL: Object to the form. 22 BY MR. ZELLERS: 23 Q. Coumarin. You state in your 24 report that coumarin is both a potential</p>	<p>1 BY MR. ZELLERS: 2 Q. Well, I'll ask you a couple 3 specifically. 4 MS. O'DELL: You know, that's a 5 little unfair. 6 A. Do you trust me enough to 7 anticipate? 8 BY MR. ZELLERS: 9 Q. No, I don't. 10 MS. O'DELL: I would say, from 11 my standpoint, listen to his questions, 12 answer the questions, and we'll be 13 better off. 14 BY MR. ZELLERS: 15 Q. It's true, correct, that there 16 are no human studies linking use of coumarin 17 to any type of cancer? 18 MS. O'DELL: Object to the form. 19 A. I don't know that I would phrase 20 it that way. The IARC monograph says that no 21 data were available to the working group on 22 studies of cancer in humans for -- for 23 coumarin. 24</p>
Page 263	Page 265
<p>1 carcinogen and a possible carcinogen. Is 2 that right? 3 A. I believe so. 4 Q. In fact, though, according to 5 IARC, coumarin is also a Group 3 agent. Is 6 that right? 7 A. That's correct, it's Group 3. 8 (Exhibit No. 28 marked) 9 BY MR. ZELLERS: 10 Q. Deposition Exhibit 28 is the 11 IARC coumarin monograph excerpts. If I asked 12 you all the same set of questions -- 13 A. I'm probably going to give you 14 the same answers. 15 Q. -- with respect to coumarin that 16 I asked you with d-Limonene, we'd get the 17 same answers. Correct? 18 MS. O'DELL: Object -- 19 A. Yes. 20 MS. O'DELL: Object to the form. 21 BY MR. ZELLERS: 22 Q. I'll ask you a couple -- 23 MS. O'DELL: Maybe. Maybe not. 24</p>	<p>1 BY MR. ZELLERS: 2 Q. Isn't it also true that in 3 animal studies, the only potential 4 association that has been found is lung -- or 5 strike that -- are lung tumors, 6 hepatocellular tumors, and renal tubal 7 adenomas? 8 A. Alveolar/bronchiolar tumors, 9 adenomas, and carcinomas in both males and 10 females, hepatocellular adenomas in females, 11 and marginal incidence in squamous cell 12 papillomas and carcinomas of the stomach. 13 Q. Those are all animal studies. 14 Correct? 15 A. Correct. I'm going to look at 16 this second one. 17 Hepatocellular tumors, and -- 18 that's in mice. Now, I spent my New Year's 19 down at the coast, and I did -- at the beach, 20 and I did thumb through these, and I feel 21 like there was another one that demonstrates 22 that here, and I want to go look at it. 23 In rats, non-neoplastic 24 cholangiofibrosis, non-bile duct carcinomas.</p>

Michael Crowley, Ph.D.

Page 266	Page 268
<p>1 Q. What type of animal study was 2 that? 3 A. That was a rat. 4 Q. With any of these animal 5 studies, do you know the dose of the chemical 6 that the animals were exposed to? 7 A. Yeah. They're present here in 8 the -- in the report. 9 Q. Eugenol. Eugenol is -- strike 10 that. 11 You state in your report that 12 eugenol is both a potential carcinogen and a 13 possible carcinogen. Is that right? 14 Page 12. 15 A. I'm actually on Page 21. I'm 16 sorry. 17 Coumarin and eugenol are not 18 classifiable. I think that's the word I 19 used. 20 Q. In fact, as with d-Limonene and 21 coumarin, eugenol is classified by IARC as a 22 Group 3 agent. Is that right? 23 A. Yes. 24 Q. At the risk of drawing another</p>	<p>1 IARC's assessment and classification, you'd 2 give me the same answers. Correct? 3 MS. O'DELL: Object to the form. 4 A. Yeah, so, I mean, the entire 5 IARC monograph is lengthy. In the case of 6 coumarin, they -- they actually have 7 Section 4, other data relevant to an 8 evaluation of carcinogenicity and its 9 mechanism. And so there they looked at the 10 pharmacokinetics; absorption, distribution, 11 metabolism, and excretion. That's on 12 Page 202 of the coumarin monograph, which I 13 don't think you had in your cut. 14 So, you know, there's a lot of 15 factors that go into these carcinogenicity 16 examinations by IARC or even NTP. 17 BY MR. ZELLERS: 18 Q. IARC is made up of a number of 19 experts who come together to look at the 20 carcinogenicity of certain chemicals. Is 21 that right? And ingredients? 22 A. It's an expert group, yeah. 23 Q. Yeah. And at least with respect 24 to IARC and the experts that are a part of</p>
Page 267	Page 269
<p>1 objection from counsel for the plaintiffs, if 2 I ask you the same questions regarding 3 eugenol that I have asked relating to 4 coumarin and d-Limonene, as relates to the 5 meaning of a Group 3 classification by IARC, 6 you'd give me the same answers. Right? 7 MS. O'DELL: Object to the form. 8 And because I don't believe that's a 9 fair way to ask those questions. If 10 you've got the questions, ask him, but, 11 you know -- 12 BY MR. ZELLERS: 13 Q. You can answer. 14 MS. O'DELL: It's a different -- 15 it's a different monograph. It's a 16 different circumstance, and he should 17 be able to have the opportunity to 18 clarify. 19 BY MR. ZELLERS: 20 Q. And he does have every 21 opportunity. But assuming I'm asking you all 22 the same set of questions with respect to 23 eugenol as I asked you with d-Limonene and 24 with coumarin, at least as it relates to</p>	<p>1 IARC's analysis for d-Limonene, coumarin, and 2 eugenol, they have determined that those are 3 all Group 3 chemicals, and the definition -- 4 or at least the statement of a Group 3 is 5 that the agent is not classifiable as to its 6 carcinogenicity to humans. Correct? 7 MS. O'DELL: Object to the form. 8 A. Yeah, that's right. And you've 9 also got to consider what routes of 10 administration they examined. Right? 11 So, you know, if you look at the 12 coumarin monograph, you don't find where it's 13 been administered vaginally in any animal to 14 ascertain whether that would pose a risk. 15 (Exhibit No. 29 marked) 16 BY MR. ZELLERS: 17 Q. Exhibit 29 are the excerpts from 18 the IARC eugenol monograph. 19 A. Is this Monograph 36? Yeah, 20 Volume 36. 21 So, again, the entire monograph 22 that I have is 363 pages long. 23 Q. You have that, and you have that 24 in front of you. Is that right?</p>

68 (Pages 266 to 269)

Page 270	Page 272
<p>1 A. I have my PDF open on my 2 computer. 3 Q. All right. It's true, is it 4 not, that there are no human studies linking 5 use of eugenol to any type of cancer? Is 6 that right? 7 MS. O'DELL: Object to the form. 8 A. I'd need to take a closer look 9 at the monograph, if you don't mind. 10 BY MR. ZELLERS: 11 Q. Are you aware of any human 12 studies linking the use of eugenol to any 13 type of cancer? 14 MS. O'DELL: Object to form. 15 A. I need to take a -- 16 THE REPORTER: Was there an 17 objection? I couldn't hear you. 18 MS. O'DELL: Yes. 19 BY MR. ZELLERS: 20 Q. When you're ready, I'd like to 21 direct you to -- 22 A. I'm still looking at the 23 monograph. Sorry. 24 So they found incidences of</p>	<p>1 monograph. 2 Q. If you -- 3 A. Endometrial stromal polyps were 4 observed in treated females. 5 Q. Mice. Correct? 6 A. Rats. 7 Q. Rats. That's what you see in 8 your -- 9 A. Yeah, that's -- 10 Q. -- evaluation of the IARC 11 monograph. Right? 12 A. Yeah. That's on Page 84. And 13 that's part of the female reproductive 14 system. 15 Q. Do you know the dose of eugenol 16 those animals -- those rats were exposed to? 17 A. It was USP grade eugenol, so 18 greater than 99 percent purity at 19 concentrations of -- it looks like 3,000 to 20 6,000 migs per kig of diet for 103 weeks. 21 There's also a skin application study here on 22 mice that I want to take a quick look at. 23 So 19 mice had papillomas, three 24 had carcinomas following dermal application,</p>
Page 271	Page 273
<p>1 hepatocellular carcinoma in males in an oral 2 administration study. 3 Q. In human males? 4 A. In mice. 5 Q. Right. My question to you is: 6 There are no human studies that were 7 identified by IARC linking the use of eugenol 8 to any type of cancer. Correct? 9 MS. O'DELL: Object to the form. 10 A. I'm looking. Is there a section 11 on human? Because I haven't found it yet. 12 BY MR. ZELLERS: 13 Q. If you take a look at the 14 monograph, Exhibit 29, go to Page 89, 4.3, 15 human data, states -- and this is the -- 16 A. Yep. 17 Q. -- IARC monograph. 18 A. That's correct. There is no 19 human data. 20 Q. With respect to animal studies, 21 the only potential association that has been 22 found relates to liver tumors. Is that 23 right? 24 A. I would need to check that</p>	<p>1 and that was 0.1 -- sorry -- 150 micrograms. 2 IP administration, which is 3 intraperitoneal, group of mice there, the 4 study was -- no incidence of tumors in that 5 one. 6 They also looked at metabolites, 7 which is also done -- 8 Q. Okay. Doctor, I've not asked 9 you anything about metabolites. I asked you 10 about human studies. I asked you about 11 animal studies. 12 MS. O'DELL: Well, he's talking 13 about the animal studies, so that's a 14 fair response. I mean, if you can 15 finish your answer, sir. 16 A. Yeah. And metabolites are 17 considered. Right? I mean, what the body 18 turns it into matters, so -- 19 BY MR. ZELLERS: 20 Q. Okay, Doctor. I want to finish, 21 so please finish your answer and let me ask 22 my next question. 23 A. So -- 24 MS. O'DELL: Finish your answer</p>

Page 274	Page 276
<p>1 if you --</p> <p>2 A. Yeah. I mean, each of these</p> <p>3 IARC monographs needs to be considered in</p> <p>4 whole, not just which parts suit your</p> <p>5 position, that the absence of human studies</p> <p>6 means that somehow these are safe. That's</p> <p>7 not the conclusion that a person of skill in</p> <p>8 the art would conclude.</p> <p>9 So there were carcinogenicity</p> <p>10 studies on the metabolites, and other</p> <p>11 bio-relevant factors are considered.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. You're referring to the animal</p> <p>14 study in rats. Is that right?</p> <p>15 A. Mice, rats, guinea pigs. They</p> <p>16 did IV admin of multiple different doses in</p> <p>17 dogs. All of that is considered when these</p> <p>18 monographs are generated.</p> <p>19 Q. And after all of that analysis</p> <p>20 and after all of that review, the IARC expert</p> <p>21 panel determined that eugenol was a Group 3</p> <p>22 agent that was not classifiable as to its</p> <p>23 carcinogenicity to humans. Correct?</p> <p>24 A. That was the conclusion, yeah.</p>	<p>1 the same -- so this is from 101. Mine is</p> <p>2 also 101. Yeah.</p> <p>3 BY MR. ZELLERS:</p> <p>4 Q. We're in sync?</p> <p>5 A. Yeah. Mine -- you know, again,</p> <p>6 I think you've got snips here. You've only</p> <p>7 got a few pages of the entire report.</p> <p>8 Q. You, though, have the full</p> <p>9 report on --</p> <p>10 A. I do.</p> <p>11 Q. -- your computer. Is that</p> <p>12 right?</p> <p>13 A. I do.</p> <p>14 Q. IARC has classified benzophenone</p> <p>15 as a 2B chemical. Is that right?</p> <p>16 A. I believe so.</p> <p>17 Q. 2B, according to IARC, means the</p> <p>18 agent is possibly carcinogenic to humans. Is</p> <p>19 that right?</p> <p>20 A. Yes, 2B means possibly</p> <p>21 carcinogenic to humans.</p> <p>22 Q. It's true, is it not, that there</p> <p>23 are no human studies linking the use of</p> <p>24 benzophenone to any type of cancer. Correct?</p>
Page 275	Page 277
<p>1 Q. Let me --</p> <p>2 A. And the conclusion in the</p> <p>3 monograph actually states it very clearly as</p> <p>4 to why they drew that conclusion. It says,</p> <p>5 "The evaluation is there is limited evidence</p> <p>6 for carcinogenicity of eugenol in</p> <p>7 experimental animals. In the absence of</p> <p>8 epidemiological data, no evaluation can be</p> <p>9 made of the carcinogenicity of eugenol in</p> <p>10 humans."</p> <p>11 Q. Let me ask you now about</p> <p>12 benzophenone. That is the last agent that</p> <p>13 you cite or reference IARC as a source for</p> <p>14 its carcinogenicity. Is that right?</p> <p>15 A. I think I also cited the</p> <p>16 national -- the NTP technical report, which</p> <p>17 is 267 pages long, and --</p> <p>18 Q. Take a look at --</p> <p>19 A. -- the IARC monograph.</p> <p>20 Q. All right. Take a look, if you</p> <p>21 will, at the IARC monograph, the excerpts,</p> <p>22 relating to benzophenone, Exhibit 30.</p> <p>23 (Exhibit No. 30 marked)</p> <p>24 A. Yeah. It looks like we've got</p>	<p>1 MS. O'DELL: Object to the form.</p> <p>2 A. Yeah, the IARC monograph says no</p> <p>3 data were available to the working group.</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. With respect to animal studies,</p> <p>6 benzophenone exposure has only been</p> <p>7 associated with an increased incidence of</p> <p>8 hepatocellular cancer, histiocystic sarcoma,</p> <p>9 leukemia, and renal tubal adenoma. Correct?</p> <p>10 A. Let's see here. Hepatoblastoma</p> <p>11 in male mice, histiocystic sarcoma in</p> <p>12 females -- female mice, increased incidence</p> <p>13 of mononuclear cell leukemia in male and</p> <p>14 female rats. Renal tube adenoma in male</p> <p>15 rats, histiocytic sarcoma in female rats, and</p> <p>16 tumors in the kidney, yeah.</p> <p>17 Q. There are no animal studies</p> <p>18 linking the use of benzophenone with an</p> <p>19 increased risk of ovarian cancer. Correct?</p> <p>20 MS. O'DELL: Object to the form.</p> <p>21 A. Just a moment. There's more</p> <p>22 because don't forget there's an NTP report,</p> <p>23 too. And, frankly, NTP is extraordinarily</p> <p>24 thorough. So let's go look at that.</p>



Page 278	Page 280
<p>1 So according to the National 2 Toxicology Program, male rats receiving 3 benzophenone had severe kidney nephropathy, 4 kidney tumors, and leukemia. Female rats had 5 higher rates of leukemia, liver tumors, 6 increased severities of kidney nephrology, 7 metaplasia, epithelia of the nose and 8 hyperplasia of the spleen. Some female mice 9 also developed rare histiocytic sarcomas. I 10 believe those were associated with the 11 repro- -- female reproductive organs. 12 The NTP program also concluded 13 that benzophenone caused cancer -- kidney 14 cancer in male rats, liver tumors in male 15 mice, and histiocytic sarcomas in female 16 mice. 17 BY MR. ZELLERS: 18 Q. At least based upon the 19 information you have available to you and 20 that you're reading from, there is not an 21 animal study cited by NTP that associates 22 benzophenone in animals with an increased 23 risk of ovarian cancer. Correct? 24 A. Yeah, so, you know --</p>	<p>1 feed study controls, and the incidence in the 2 625 part per million group exceeded the 3 historical control range for all routes. 4 In the current two-year study, 5 only females were affected, and the liver and 6 lung were involved in all affected females. 7 The histiocytic sarcomas were 8 highly invasive in all three 1,250 PPM mice. 9 Multiple organs throughout the body had 10 neoplastic histiocytic legions; ovaries, 11 uterus, spleen, adrenal gland, kidney, 12 urinary bladder, and multiple lymph nodes 13 were affected in all three animals. 14 MR. ZELLERS: Move to strike as 15 nonresponsive. 16 BY MR. ZELLERS: 17 Q. Doctor -- 18 MS. O'DELL: I oppose the 19 motion. 20 BY MR. ZELLERS: 21 Q. On Page -- 22 THE REPORTER: I did not hear 23 you. 24 MS. O'DELL: I oppose the</p>
Page 279	Page 281
<p>1 Q. Is that correct? 2 A. That's correct, but the question 3 really requires some qualification. There is 4 no ovarian cancer animal model that I am 5 aware of. And if you look in the report 6 issued by Canada and their health ministry, 7 they state that. There is no animal model 8 for ovarian cancer. 9 Q. Are you ready for my next 10 question? 11 A. Yes. Just one moment, please. 12 You were asking about 13 benzophenone, and I knew there was an 14 association with ovaries. So this is from 15 the NTP report, and I'm going to read it. 16 Histiocytic sarcoma in females. There was a 17 positive trend in the incidence of 18 histiocytic sarcomas, all organs. The 19 evidence in 625 part per million females was 20 significantly greater than that in the 21 controls. 22 That's from Table 17 in D3 of 23 that particular report. Only two histiocytic 24 sarcomas have been observed in historical</p>	<p>1 motion. 2 BY MR. ZELLERS: 3 Q. On Page 21, you state that the 4 Environmental Protection Agency designated 5 p-Cresol, or para-Cresol, as possibly 6 carcinogenic. Is that right? 7 A. Yes. 8 Q. Do you know what studies the EPA 9 reviewed in determining that p-Cresol is a 10 potential carcinogen? 11 A. I believe that I found a report 12 to support that, and it was the -- also in 13 the NTP report. I also found "The tumor- 14 promoting -- tumor-promoting action of phenol 15 and related compounds" -- 16 THE REPORTER: Doctor. 17 THE WITNESS: I'm sorry. 18 THE REPORTER: I don't know if 19 I'm going to have that, so can you try 20 to read a little slower? 21 THE WITNESS: Yeah. 22 A. The report titled "The 23 tumor-promoting action of phenol and related 24 compounds for mouse skin" by Boutwell and</p>



Page 282	Page 284
<p>1 Bosch.</p> <p>2 Q. Again, you're referencing animal</p> <p>3 studies. Correct?</p> <p>4 A. Yeah.</p> <p>5 Q. You are not aware of any human</p> <p>6 studies relating p-Cresol as a potential</p> <p>7 carcinogen. Correct?</p> <p>8 MS. O'DELL: Object to the form.</p> <p>9 A. Just so we're clear, it's</p> <p>10 unethical to infuse human ovaries with</p> <p>11 para-Cresol or any of these. That's just not</p> <p>12 done.</p> <p>13 BY MR. ZELLERS:</p> <p>14 Q. The answer to my question is,</p> <p>15 yes, it's correct, you are not aware of any</p> <p>16 human studies. Right?</p> <p>17 MS. O'DELL: No. Object to the</p> <p>18 form. You don't get to rephrase his</p> <p>19 answer.</p> <p>20 MR. ZELLERS: I'm not --</p> <p>21 MS. O'DELL: He responded to</p> <p>22 your question. If you want to ask him</p> <p>23 another question, Dr. Crowley is --</p> <p>24 MR. ZELLERS: I want him to</p>	<p>1 studies are done in animals.</p> <p>2 Q. Do you know whether</p> <p>3 carcinogenicity with p-Cresol has been</p> <p>4 observed in humans?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. I'm sorry. Can you please</p> <p>7 repeat the question?</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. Sure. Are you aware of any</p> <p>10 study or finding of carcinogenicity observed</p> <p>11 in humans with p-Cresol or para-Cresol?</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A. So I have a journal article here</p> <p>14 that I believe I cited, "The International</p> <p>15 Journal of Toxicology," from 2006, Volume 25,</p> <p>16 Supplement 1, Pages 29 through 127. "The</p> <p>17 safety of Cresols was reviewed by the World</p> <p>18 Health Organization in 1995. The WHO report</p> <p>19 concluded there is clear evidence in humans</p> <p>20 that during dermal or oral exposure, high</p> <p>21 concentrations of Cresols are corrosive,</p> <p>22 absorb rapidly, and produce severe toxicity</p> <p>23 that may result in death."</p> <p>24</p>
Page 283	Page 285
<p>1 answer my --</p> <p>2 MS. O'DELL: -- willing to</p> <p>3 respond to you. But you don't get to</p> <p>4 dictate what his response is going to</p> <p>5 be.</p> <p>6 MR. ZELLERS: But I do get to</p> <p>7 ask him for a response.</p> <p>8 MS. O'DELL: And he gave you</p> <p>9 one.</p> <p>10 MR. ZELLERS: Well --</p> <p>11 BY MR. ZELLERS:</p> <p>12 Q. Doctor, you are not aware of any</p> <p>13 human study associating p-Cresol with any</p> <p>14 type of ovarian cancer. Correct?</p> <p>15 MS. O'DELL: Object to the form,</p> <p>16 asked and answered.</p> <p>17 A. So, as I said, I don't think</p> <p>18 that any regulatory authority in the world</p> <p>19 would allow me to administer para-Cresol to a</p> <p>20 human ovary. It wouldn't happen.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Are you --</p> <p>23 A. So to make that assertion in</p> <p>24 humans is not ethically possible. These</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. Is there --</p> <p>3 A. So --</p> <p>4 Q. -- any study that associates</p> <p>5 p-Cresol or para-Cresol with ovarian</p> <p>6 cancer in humans?</p> <p>7 A. That study would never be done.</p> <p>8 So, no, that doesn't exist. It is unethical</p> <p>9 to dose ovaries with para-Cresol.</p> <p>10 Q. Are you aware of any observation</p> <p>11 of an increased risk of ovarian cancer with</p> <p>12 exposure to para-Cresol or para-Cresol in</p> <p>13 humans?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. So I believe I mentioned this</p> <p>16 before. There was a positive validated</p> <p>17 cytogenic response in Chinese hamster ovary</p> <p>18 cells, including DNA damage to human</p> <p>19 lymphocytes, and morphological</p> <p>20 transformations in mouse fibroblasts.</p> <p>21 All three of those studies are</p> <p>22 done with cell lines. They are in vitro,</p> <p>23 because we don't ethically endanger humans,</p> <p>24 and those are all types of things that are</p>

Michael Crowley, Ph.D.

Page 286	Page 288
<p>1 considered by IARC, NTP, and so forth.</p> <p>2 According to this report, Derek</p> <p>3 and Lewis studied the cellular toxicity</p> <p>4 effects against CHO cells in a culture for 20</p> <p>5 hours with para-Cresol at a concentration</p> <p>6 of 1,000 micrograms per mil, and they -- they</p> <p>7 found these results, which are indicative of</p> <p>8 toxicity.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. You do not know the</p> <p>11 concentration or the amount of p-Cresol or</p> <p>12 para-Cresol in baby powder or Shower to</p> <p>13 Shower. Correct?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. Again, Johnson &amp; Johnson never</p> <p>16 provided the information in order to do any</p> <p>17 kind of analysis like that.</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. You also have not made any</p> <p>20 estimate or evaluation and have no</p> <p>21 information as to the exposure of women to</p> <p>22 either baby powder or Shower to Shower.</p> <p>23 Correct?</p> <p>24 MS. O'DELL: Object to the form.</p>	<p>1 but we could go check the underlying study.</p> <p>2 Q. What evidence are you relying on</p> <p>3 that this molecule is associated with ovarian</p> <p>4 cancer?</p> <p>5 A. Let's go take a look. So sister</p> <p>6 chromatid exchange and chromosomal</p> <p>7 aberrations in Chinese hamster ovary cells,</p> <p>8 the concentration was 16 to 160 micrograms</p> <p>9 per milliliter in the Galloway study.</p> <p>10 Let's go take a look at the</p> <p>11 European Food Safety Authority studies if you</p> <p>12 like.</p> <p>13 Q. Any human study or study of</p> <p>14 ethyl methylphenylglycidate --</p> <p>15 A. Human tox studies aren't</p> <p>16 performed, as we've discussed.</p> <p>17 Q. So the answer is no. Correct?</p> <p>18 No human toxicology study. Correct?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A. That's correct.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Juniperus communis fruit oil.</p> <p>23 You state that the CIR expert panel concluded</p> <p>24 that there is insufficient information</p>
Page 287	Page 289
<p>1 A. Yeah, so I can't do that without</p> <p>2 the information that Johnson &amp; Johnson did</p> <p>3 not provide, so --</p> <p>4 BY MR. ZELLERS:</p> <p>5 Q. On Page 21 of your report, you</p> <p>6 state that the European Food Safety Authority</p> <p>7 found that there is substantial evidence that</p> <p>8 ethyl methylphenylglycidate --</p> <p>9 A. I'm sorry. What page did you</p> <p>10 say?</p> <p>11 Q. Page 21 -- has genotoxic</p> <p>12 potential from the available in vitro and</p> <p>13 in vivo studies.</p> <p>14 Did you make that statement?</p> <p>15 A. I didn't make that statement.</p> <p>16 The European Food Safety Authority did.</p> <p>17 Q. Do you know whether these</p> <p>18 studies were conducted on animals or humans?</p> <p>19 A. Usually those studies are</p> <p>20 conducted on animals.</p> <p>21 Q. Do you know what doses of the</p> <p>22 chemical the study subjects, the animals,</p> <p>23 were exposed to?</p> <p>24 A. I didn't commit them to memory,</p>	<p>1 available to support the safety of juniperus</p> <p>2 communis fruit oil for use in cosmetics.</p> <p>3 Did you make that statement?</p> <p>4 A. I believe I quoted the CIR</p> <p>5 review panel.</p> <p>6 Q. Do you know what --</p> <p>7 A. So it's not really a statement.</p> <p>8 It's -- it's a citation to those folks.</p> <p>9 Q. Do you know what information the</p> <p>10 CIR expert panel considered?</p> <p>11 A. Yeah, I read the report.</p> <p>12 Q. Do you know if it was related to</p> <p>13 any type of cancer?</p> <p>14 A. I would have to go back and</p> <p>15 review the report.</p> <p>16 Q. Juniperus communis fruit oil is</p> <p>17 fruit oil. Correct?</p> <p>18 A. It's juniper fruit oil, I</p> <p>19 believe, which -- I mean, it's a -- it's an</p> <p>20 extract. Right? So I think, actually,</p> <p>21 that's one that's actually a combination of</p> <p>22 many things. I don't think it's one unique</p> <p>23 chemical, if my memory serves me.</p> <p>24 Q. On Page 48, you state that the</p>

73 (Pages 286 to 289)

Page 290	Page 292
<p>1 European Scientific Committee on Health and</p> <p>2 Environmental Risk has classified musk ketone</p> <p>3 as a Category 3 carcinogen. Is that right?</p> <p>4 A. I'm sorry. What page did you</p> <p>5 say?</p> <p>6 Q. Page 48.</p> <p>7 A. Again, I didn't state it. I'm</p> <p>8 just citing the source.</p> <p>9 Q. You went out and you did your</p> <p>10 search and collected information, and here</p> <p>11 you're citing from an entity called SCHER,</p> <p>12 S-C-H-E-R, which is the Scientific Committee</p> <p>13 on Health and Environmental Risk with the</p> <p>14 European Commission. Is that right?</p> <p>15 A. Yes.</p> <p>16 (Exhibit No. 31 marked)</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Take a look at Deposition</p> <p>19 Exhibit 31. This document sets forth the</p> <p>20 classification of a musk ketone. Is that</p> <p>21 right? And again --</p> <p>22 A. Yep.</p> <p>23 Q. Strike that.</p> <p>24 Turning to the third page in the</p>	<p>1 assessment.</p> <p>2 So this is consistent with how I</p> <p>3 have worked in the past in doing safety</p> <p>4 analyses on other compounds.</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. What the Scientific Committee on</p> <p>7 Health and Environmental Risk looked at was a</p> <p>8 chemical called musk xylene. Is that right?</p> <p>9 A. That's what it says.</p> <p>10 Q. If you take a look at the</p> <p>11 information that they considered in</p> <p>12 classifying musk ketone as a Category 3</p> <p>13 carcinogen -- look on Page 3, under opinion,</p> <p>14 the second paragraph of 3.1, introduction.</p> <p>15 Do you see that?</p> <p>16 A. Yes.</p> <p>17 Q. What SCHER -- the committee</p> <p>18 states, "Musk xylene has been classified as</p> <p>19 'Category 3 carcinogen'" --</p> <p>20 A. Uh-huh.</p> <p>21 Q. -- "based on an 80-week oral</p> <p>22 carcinogenicity study in mice and absence of</p> <p>23 genotoxicity. The classification of musk</p> <p>24 xylene as 'Category 3 carcinogen' is</p>
Page 291	Page 293
<p>1 second paragraph under background, it states,</p> <p>2 "The recommendation for carcinogenic</p> <p>3 Category 3 was obtained by reading-across</p> <p>4 from musk xylene (which is classified as such</p> <p>5 since the 29th ATP), since there are no test</p> <p>6 data on carcinogenicity on musk ketone</p> <p>7 itself."</p> <p>8 Is that right?</p> <p>9 A. That's right.</p> <p>10 Q. So the classification was based</p> <p>11 on studies of a chemical that is similar to</p> <p>12 musk ketone, but not on studies that actually</p> <p>13 involved musk ketone. Correct?</p> <p>14 MS. O'DELL: Objection to form.</p> <p>15 A. That's correct. And you make</p> <p>16 a -- this is, I think, an important</p> <p>17 circumstance here. Because this is how the</p> <p>18 SafeBridge folks classify compounds. They do</p> <p>19 a read-across.</p> <p>20 What does this particular</p> <p>21 compound have in common with others that are</p> <p>22 like it? And as part of that, they examine</p> <p>23 the available literature in animal studies</p> <p>24 and in vitro studies to make that sort of</p>	<p>1 considered as a borderline case since an</p> <p>2 increase in liver tumors in the highly</p> <p>3 sensitive B6C3F1 mouse is considered of</p> <p>4 little relevance for human hazard</p> <p>5 assessment."</p> <p>6 Did I read that correctly?</p> <p>7 A. Yes, I believe you did.</p> <p>8 Q. All right. Musk xylene is</p> <p>9 classified as a Category 3 carcinogen based</p> <p>10 on this study of mice. Correct?</p> <p>11 A. Well, I mean, you just read the</p> <p>12 paragraph to me. It's an 80-week oral study.</p> <p>13 Now, in this -- in this case, I'd like to see</p> <p>14 an 80-week vaginal study.</p> <p>15 Q. Okay. You've got to answer --</p> <p>16 please answer my questions.</p> <p>17 This classification was based</p> <p>18 upon an animal study; in this case, mice. Is</p> <p>19 that correct?</p> <p>20 A. Yes.</p> <p>21 Q. The mice were highly predisposed</p> <p>22 to cancer. Is that right?</p> <p>23 A. I mean, they said highly</p> <p>24 sensitive. I don't know that that means</p>

Michael Crowley, Ph.D.

Page 294	Page 296
<p>1 they're predisposed or not, but --</p> <p>2 Q. This animal study does not</p> <p>3 relate in any way to ovarian cancer.</p> <p>4 Correct?</p> <p>5 A. I wouldn't --</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 THE WITNESS: Sorry.</p> <p>8 A. Yeah, I wouldn't call it that.</p> <p>9 BY MR. ZELLERS:</p> <p>10 Q. You would agree with me that it</p> <p>11 doesn't relate to ovarian cancer?</p> <p>12 A. No, not really. No.</p> <p>13 MR. ZELLERS: Let's take a break</p> <p>14 so we can change our disc.</p> <p>15 THE WITNESS: Okay.</p> <p>16 THE VIDEOGRAPHER: Going off the</p> <p>17 record, the time is 4:01 p.m.</p> <p>18 (Recess from 4:01 p.m. to</p> <p>19 4:21 p.m.)</p> <p>20 THE VIDEOGRAPHER: This marks</p> <p>21 the beginning of Disc 4. Back on the</p> <p>22 record, the time is 4:21 p.m.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. Dr. Crowley, I want to go back</p>	<p>1 only thing I want to clarify is that you and</p> <p>2 I were in agreement that at least with musk</p> <p>3 xylene, there was no animal study associating</p> <p>4 that chemical or musk ketone with ovarian</p> <p>5 cancer. Correct?</p> <p>6 A. That's correct.</p> <p>7 Q. All right.</p> <p>8 A. It's got similar properties to</p> <p>9 musk xylene, but it does not have</p> <p>10 carcinogenic studies in animals.</p> <p>11 Q. In your report, Section 4.4, you</p> <p>12 discuss the fragrance chemicals that are</p> <p>13 classified as irritants. Is that right?</p> <p>14 This is Page 27.</p> <p>15 A. I think so, yes.</p> <p>16 Q. You rely on hazard statements</p> <p>17 from the GHS. Is that right?</p> <p>18 A. GHS and -- and OSHA.</p> <p>19 Q. You have a discussion here about</p> <p>20 whether the GHS classifies the chemical as an</p> <p>21 irritant or sensitizer. Is that right?</p> <p>22 A. I'm sorry. What's your --</p> <p>23 what's your question?</p> <p>24 Q. Sure. My question is --</p>
Page 295	Page 297
<p>1 just to the Deposition Exhibit 31. I thought</p> <p>2 I asked you a couple of questions at the end</p> <p>3 of our last session which were clear, but</p> <p>4 when I glanced back at our real-time</p> <p>5 transcript, they did not look clear.</p> <p>6 MS. O'DELL: The last exhibit I</p> <p>7 have is 30. Am I wrong?</p> <p>8 THE WITNESS: It's the musk</p> <p>9 ketone.</p> <p>10 MS. O'DELL: Musk ketone.</p> <p>11 Excuse me. Okay. Sorry.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. My only question that I want to</p> <p>14 clarify is we had some discussion about a</p> <p>15 study involving mice and musk xylene. That</p> <p>16 study did not -- was an animal study, but it</p> <p>17 did not relate in any way to ovarian cancer.</p> <p>18 Is that correct?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A. Yeah. I mean, that was a --</p> <p>21 where was it? I'm sorry. We were on Page 3.</p> <p>22 Where was the dadgum thing? It was --</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. I was looking on Page 3. The</p>	<p>1 A. Are you asking me if I described</p> <p>2 them? Yes, I did.</p> <p>3 Q. All right. GHS also has</p> <p>4 classifications for the carcinogenicity of</p> <p>5 chemicals. Is that right?</p> <p>6 A. I believe so, yes.</p> <p>7 Q. Those categories are H350, may</p> <p>8 cause cancer; H350i, may cause cancer by</p> <p>9 inhalation; and H351, suspected of causing</p> <p>10 cancer?</p> <p>11 MS. O'DELL: Object to the form.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. Is that right?</p> <p>14 A. That is consistent with my</p> <p>15 recollection. I think they may have a few</p> <p>16 more, but I could be wrong. I'd have to look</p> <p>17 at it.</p> <p>18 Q. The GHS, to your knowledge, has</p> <p>19 not classified any of these chemicals as may</p> <p>20 cause cancer or suspected of causing cancer.</p> <p>21 Correct?</p> <p>22 MS. O'DELL: Object to the form.</p> <p>23 A. I don't believe that I looked</p> <p>24 for that.</p>

75 (Pages 294 to 297)

<p style="text-align: right;">Page 298</p> <p>1 BY MR. ZELLERS:</p> <p>2 Q. Are you aware of any</p> <p>3 classification by GHS with respect to any of</p> <p>4 the chemicals that you identify in your</p> <p>5 report where GHS has classified the chemicals</p> <p>6 as either may cause cancer or suspected of</p> <p>7 causing cancer?</p> <p>8 A. I think there were --</p> <p>9 MS. O'DELL: Object to the form,</p> <p>10 asked and answered.</p> <p>11 THE WITNESS: Sorry.</p> <p>12 A. I think there were some that</p> <p>13 were marked as suspected, and they --</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Are those in your report?</p> <p>16 A. I believe they're in the</p> <p>17 appendices. I think I put them in there. Do</p> <p>18 you want me to search for them?</p> <p>19 Q. No. What I want you to do,</p> <p>20 though, is -- you collected this information</p> <p>21 regarding the different chemicals. Correct?</p> <p>22 A. Yes.</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24</p>	<p style="text-align: right;">Page 300</p> <p>1 information is a predecessor to the GHS</p> <p>2 system. Correct?</p> <p>3 MS. O'DELL: Object to the form.</p> <p>4 A. I don't know which came first,</p> <p>5 to be candid with you, so --</p> <p>6 BY MR. ZELLERS:</p> <p>7 Q. They contain similar type</p> <p>8 information?</p> <p>9 A. Yeah.</p> <p>10 Q. What methodology did you use to</p> <p>11 determine that chemicals that GHS classifies</p> <p>12 as irritants or sensitizers but not</p> <p>13 carcinogens contribute to cancer?</p> <p>14 MS. O'DELL: Object to the form,</p> <p>15 mis- -- lack of foundation.</p> <p>16 A. So, you know, as I was stating</p> <p>17 previously, irritants, sensitizers,</p> <p>18 allergens, and so forth all elicit immune</p> <p>19 responses -- I'm sorry -- inflammatory</p> <p>20 responses, and increases in inflammation have</p> <p>21 been associated with a higher risk for</p> <p>22 cancer.</p> <p>23 BY MR. ZELLERS:</p> <p>24 Q. For each of the chemicals that</p>
<p style="text-align: right;">Page 299</p> <p>1 BY MR. ZELLERS:</p> <p>2 Q. That would have included any GHS</p> <p>3 assessments of the chemicals, including</p> <p>4 whether they may cause cancer or are</p> <p>5 suspected of causing cancer. Correct?</p> <p>6 A. No. I looked at MSDS sheets,</p> <p>7 and I also looked at fragrance companies that</p> <p>8 had some of that information on their</p> <p>9 websites.</p> <p>10 So the -- if I found the</p> <p>11 information in an MSDS, I recorded it. If it</p> <p>12 was listed on the fragrance company website,</p> <p>13 you know, I recorded that as well.</p> <p>14 I didn't buy access to the GHS</p> <p>15 system that has those listings for each and</p> <p>16 every chemical. I don't know how to do --</p> <p>17 how to get that access, so --</p> <p>18 Q. To the extent you found any</p> <p>19 information, you would have included it in</p> <p>20 your --</p> <p>21 A. Yes.</p> <p>22 Q. -- appendices. Correct?</p> <p>23 A. Yes.</p> <p>24 Q. MSDS, those sheets or that</p>	<p style="text-align: right;">Page 301</p> <p>1 you list in Section 4.4 that are classified</p> <p>2 as irritants, do you know how much exposure</p> <p>3 is necessary to cause irritation?</p> <p>4 MS. O'DELL: Object to the form.</p> <p>5 A. It varies on a case-by-case</p> <p>6 basis. I did make every effort to identify</p> <p>7 and find those underlying studies, including</p> <p>8 studies that were published, you know, 70</p> <p>9 years ago in the 1950s. Many of those</p> <p>10 studies were included in the fragrance</p> <p>11 monograph book that I purchased that outlined</p> <p>12 them that described the thresholds.</p> <p>13 And, in addition, several of</p> <p>14 these compounds, as we talked about</p> <p>15 previously, have usage restrictions described</p> <p>16 by any number of authorities like the</p> <p>17 European Food Safety Authority or the FDA.</p> <p>18 And then, you know, the trade groups, you</p> <p>19 know, IFRA and CIR have also, you know,</p> <p>20 published levels.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. With irritants, threshold levels</p> <p>23 or dosage is a necessary part of the</p> <p>24 analysis. Correct?</p>



Michael Crowley, Ph.D.

Page 302	Page 304
<p>1 MS. O'DELL: Object to the form.</p> <p>2 A. Yes. Irritants are threshold</p> <p>3 based. You know, the important thing to</p> <p>4 understand there is it's usually done on a</p> <p>5 fairly small pool of people, and the</p> <p>6 threshold is sort of an average of a group,</p> <p>7 so it may vary from person to person.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. As we discussed earlier, you did</p> <p>10 not consider how much of each chemical is in</p> <p>11 the finished product, either baby powder or</p> <p>12 Shower to Shower. Correct?</p> <p>13 MS. O'DELL: Object to the form.</p> <p>14 A. So we -- we've talked about this</p> <p>15 a lot. We asked for the information from J&amp;J</p> <p>16 to enable doing that, and it was never</p> <p>17 provided. So I was unable to do that kind of</p> <p>18 thing.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. You did not consider how much of</p> <p>21 each chemical actually reached the ovary in</p> <p>22 women. Correct?</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24 A. Yeah, I've answered that</p>	<p>1 and then the GHS classifications; H315,</p> <p>2 causes skin irritation; H317, causes an</p> <p>3 allergic skin reaction; R 36/38, irritating</p> <p>4 the skin and eyes; R 43 --</p> <p>5 THE REPORTER: Skin what?</p> <p>6 Irritating the skin --</p> <p>7 THE WITNESS: And eyes.</p> <p>8 THE REPORTER: You're facing</p> <p>9 that way. Thank you.</p> <p>10 Q. If you make reference to a GHS</p> <p>11 classification in the appendices, you had</p> <p>12 access, then, to the GHS classifications for</p> <p>13 that chemical. Correct?</p> <p>14 MS. O'DELL: Object to the form.</p> <p>15 A. I got the information from a</p> <p>16 number of sources. So MSDS sheets, fragrance</p> <p>17 company websites, the -- a number of sources,</p> <p>18 including the monograph of fragrance and</p> <p>19 flavors also had some of those.</p> <p>20 So, you know, if it's been</p> <p>21 disclosed as an irritant or a skin sensitizer</p> <p>22 but I was unable to find, you know, an MSDS</p> <p>23 that stated it as such -- you know, so, for</p> <p>24 example, I think that -- I mean, the balsam</p>
Page 303	Page 305
<p>1 question previously.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. And that was not information</p> <p>4 that you had available. Correct?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. I wasn't asked to consider it,</p> <p>7 and it wasn't available to me.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. And at least on how much of a</p> <p>10 chemical may reach the ovary, you'll defer to</p> <p>11 other experts. Is that correct?</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A. Yeah, potentially. I may get</p> <p>14 reengaged to provide more testimony there.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. What studies are you relying on</p> <p>17 in classifying these chemicals in Section 4.4</p> <p>18 as irritants? Are they referenced in your</p> <p>19 report?</p> <p>20 A. Yeah, they're predominantly</p> <p>21 listed in the appendices. So, for example,</p> <p>22 if you go to Page 70, that's the Appendix A,</p> <p>23 and it starts with d-Limonene. You'll see</p> <p>24 that the fourth column there's a PubChem link</p>	<p>1 Peru, one of the reasons it's restricted is</p> <p>2 because so many people are sensitive to it.</p> <p>3 I didn't need a GHS to know that it was a</p> <p>4 sensitizer.</p> <p>5 BY MR. ZELLERS:</p> <p>6 Q. My question is a little</p> <p>7 different.</p> <p>8 If you reference a GHS</p> <p>9 category --</p> <p>10 A. Yeah.</p> <p>11 Q. -- for a chemical in your</p> <p>12 appendix, does that mean, for that chemical,</p> <p>13 that you had access to the GHS data?</p> <p>14 A. No. So you're asking did I look</p> <p>15 at the underlying data from an MSDS sheet?</p> <p>16 Not necessarily.</p> <p>17 You know, I did a literature</p> <p>18 review. I used Web of Science. I used</p> <p>19 Google Scholar. You know, a number of these</p> <p>20 sources, including that monograph book,</p> <p>21 provide the underlying data that you can go</p> <p>22 to.</p> <p>23 And so I cited that where</p> <p>24 possible inside the report and in the</p>

77 (Pages 302 to 305)



Michael Crowley, Ph.D.

Page 306	Page 308
<p>1 appendices, and in many cases I did go read 2 the underlying reports if I could get them. 3 Q. Do you know whether, in the 4 reports that you looked at, that there was a 5 pure concentration of the substance used or a 6 diluted chemical? 7 MS. O'DELL: Objection to the 8 form. 9 A. Yeah, almost always in the early 10 studies they were mixing it with Vaseline and 11 diluting it. And they, in some cases, would 12 do multiple strengths. They were not 13 applying it at a 100 percent concentration, 14 nor were they applying it after it had been 15 blended with talc. 16 So the utility of those, you 17 know, studies could certainly vary. There 18 could be, certainly, instances where, you 19 know, blending with talc reduces the 20 likelihood of irritation or sensitization or 21 an allergic response, and, to the contrary, 22 there may be circumstances where blending 23 with talc could produce a stronger irritation 24 or what have you.</p>	<p>1 MS. O'DELL: Object to the form. 2 A. I have found studies that link 3 inflammation to cancer. That's an 4 established link. That's indisputable. The 5 Canadians stated as much in their assessment 6 on peroneal application of talc, and these 7 fragrance chemicals are part of that product. 8 BY MR. ZELLERS: 9 Q. How -- 10 A. It's all -- it's all part of one 11 product. 12 Q. How do you define inflammation? 13 A. An inflammatory response. 14 Q. How do the ingredients you 15 identify as irritants cause inflammation? 16 MS. O'DELL: Object to the form. 17 A. I can't believe I'm going to 18 have to explain how an irritant causes 19 inflammation. 20 Inflammation is the result of 21 any number of insults to a tissue. Cell 22 death results in inflammation just as much as 23 a burn does. So there's all sorts of 24 chemicals, including cytokines and so forth,</p>
Page 307	Page 309
<p>1 BY MR. ZELLERS: 2 Q. Those types of studies or 3 information was not available to you. 4 Correct? 5 MS. O'DELL: Objection to form. 6 A. No. Some of them were. I did 7 go look at several of them. 8 BY MR. ZELLERS: 9 Q. And you referenced them in the 10 appendices. Is that right? 11 A. Yeah. 12 Q. You have not done any scientific 13 analyses yourself as to whether or not a skin 14 or eye irritant can cause or contribute to 15 ovarian cancer in humans. Correct? 16 MS. O'DELL: Object to the form. 17 A. I have not done that study. 18 BY MR. ZELLERS: 19 Q. You also have not found any 20 studies on humans that support the statement 21 that irritation can lead to inflammation and 22 can contribute to ovarian cancer with respect 23 to the chemicals you identify as irritants. 24 Is that right?</p>	<p>1 associated with inflammation. It's so well 2 understood, you can draw blood and mesh 3 concentrations in plasma and get a sense of 4 how inflamed someone is. 5 BY MR. ZELLERS: 6 Q. At what dose does an irritant 7 cause inflammation? 8 MS. O'DELL: Object to the form. 9 A. That varies on a case-by-case 10 basis. 11 BY MR. ZELLERS: 12 Q. As we discussed earlier, you 13 have not done any type of dose analysis with 14 respect to the chemicals or fragrance 15 chemicals that you have identified in the 16 baby powder or Shower to Shower. Correct? 17 MS. O'DELL: Object to the form. 18 A. Yeah, I was unable to do it 19 because J&amp;J didn't provide the information to 20 enable such an analysis. 21 BY MR. ZELLERS: 22 Q. In your opinion, do both acute 23 and prolonged inflammation contribute to 24 ovarian cancer?</p>

78 (Pages 306 to 309)

Michael Crowley, Ph.D.

Page 310	Page 312
<p>1 A. That's my understanding, yes.</p> <p>2 Q. What study or studies are you</p> <p>3 relying on for that statement?</p> <p>4 A. Okay. Ness and Cottreau from</p> <p>5 1999 -- these are from Dydek's paper. I can</p> <p>6 also point you to the Canadian assessment on</p> <p>7 the safety of talc where they also stated</p> <p>8 that chronic inflammation and oxidative</p> <p>9 stress are important factors in the</p> <p>10 development and behavior of cancer, including</p> <p>11 ovarian cancer.</p> <p>12 But it might be better to rely</p> <p>13 upon some of the other experts to address</p> <p>14 that. But since you asked, I can list the</p> <p>15 papers that I looked at.</p> <p>16 Q. Okay. I don't need you to read</p> <p>17 me the papers that are referenced in</p> <p>18 Dr. Dydek's report. That's what you're</p> <p>19 referring to. Is that right?</p> <p>20 MS. O'DELL: Object to the form.</p> <p>21 I don't think that's what he was -- he</p> <p>22 was saying.</p> <p>23 A. No. I mentioned Dydek and the</p> <p>24 Canadian Department of -- or Ministry of</p>	<p>1 A. 42?</p> <p>2 Q. Yes.</p> <p>3 MS. O'DELL: I don't think</p> <p>4 that's the right page.</p> <p>5 MR. ZELLERS: We looked at this</p> <p>6 earlier today. It was --</p> <p>7 BY MR. ZELLERS:</p> <p>8 Q. So on Page 42 for methyl</p> <p>9 salicylate --</p> <p>10 A. Salicylate.</p> <p>11 Q. -- salicylate, you identify the</p> <p>12 IFRA acceptable level of use in dermal</p> <p>13 cosmetics, the amount. Is that right?</p> <p>14 A. I have listed the use level for</p> <p>15 cosmetics and the dermal systemic exposure in</p> <p>16 cosmetic products. There's two of them.</p> <p>17 Q. We had the discussion before.</p> <p>18 You don't know the amount or the</p> <p>19 concentration that is in the talc powder or</p> <p>20 Shower to Shower product in this case.</p> <p>21 Correct?</p> <p>22 A. That's correct.</p> <p>23 MS. O'DELL: Object to the form.</p> <p>24</p>
Page 311	Page 313
<p>1 Health report.</p> <p>2 BY MR. ZELLERS:</p> <p>3 Q. Your methodology here, again,</p> <p>4 was to go out and, you know, to do a search</p> <p>5 of the literature and to read the literature</p> <p>6 and to provide the opinions that you're</p> <p>7 providing today. Correct?</p> <p>8 A. That was one part of it, yeah.</p> <p>9 Q. You've identified ingredients as</p> <p>10 skin and eye irritants for which IFRA has</p> <p>11 established acceptable levels of use. Is</p> <p>12 that right?</p> <p>13 A. I'm sorry. What page are you</p> <p>14 on?</p> <p>15 Q. Well, look at Page 30 of your</p> <p>16 report, Table 8. You identify methyl</p> <p>17 salicylate as a skin and eye irritant. Is</p> <p>18 that right?</p> <p>19 A. Methyl salicylate, yeah.</p> <p>20 Q. Then on Page 42 of your report,</p> <p>21 you show that IFRA has established acceptable</p> <p>22 levels of use in dermal cosmetics.</p> <p>23 A. Sorry.</p> <p>24 Q. Is that --</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. In your report, you opine that</p> <p>3 the eye and the vagina are similar because</p> <p>4 they are both mucous membranes. That's on</p> <p>5 Page 12. Is that right?</p> <p>6 A. I think you've mischaracterized.</p> <p>7 So most of these cosmetic chemicals have eye</p> <p>8 irritation studies because a lot of them go</p> <p>9 in cosmetics, so they end up near the eye.</p> <p>10 And so the exposure to the eye is considered</p> <p>11 as part of the safety program.</p> <p>12 Vaginal applications, not so</p> <p>13 much, because very few cosmetics are applied</p> <p>14 to the vaginal area. Usually those are</p> <p>15 drugs.</p> <p>16 Q. You would agree, then, that the</p> <p>17 eye and the vagina are not the same in terms</p> <p>18 of mucous membranes and any irritation from</p> <p>19 the chemicals you've identified?</p> <p>20 MS. O'DELL: Object to the form.</p> <p>21 A. They are both mucous membranes,</p> <p>22 and what I've suggested is that which</p> <p>23 irritates the eye is also very likely to</p> <p>24 irritate the vagina. The difficulty proof</p>

79 (Pages 310 to 313)

Page 314	Page 316
<p>1 would be to do that study, but, again, there</p> <p>2 are some ethics involved in that.</p> <p>3 BY MR. ZELLERS:</p> <p>4 Q. What study are you relying on to</p> <p>5 make the statement that fragrances that are</p> <p>6 identified as eye irritants are likely to</p> <p>7 irritate the vaginal mucosa?</p> <p>8 A. It's common general knowledge.</p> <p>9 The same thing -- I mean, the same thing --</p> <p>10 usually those that irritate eyes also</p> <p>11 irritate lungs. They're both mucous</p> <p>12 membranes. Not always, but it's a good and</p> <p>13 safe generalization.</p> <p>14 Q. Are there studies that you are</p> <p>15 aware of with respect to the irritation of</p> <p>16 the chemicals that you identified in your</p> <p>17 report as irritants to the vaginal mucosa?</p> <p>18 A. I would have to check. I think,</p> <p>19 like I said, I found three out of the 175</p> <p>20 that have been studied in the -- for safety</p> <p>21 in the vagina. So only three out of the 175</p> <p>22 have been examined in those studies. I'd</p> <p>23 need to go check and find out if any of them</p> <p>24 were found to be vaginal irritants.</p>	<p>1 cause inflammation and oxidative stress.</p> <p>2 Q. Are you aware of any studies</p> <p>3 which have looked at the use of sensitizers</p> <p>4 in the development of ovarian cancer?</p> <p>5 MS. O'DELL: Object to the form.</p> <p>6 A. To the best of my knowledge,</p> <p>7 there is no good animal study for ovarian</p> <p>8 cancer. So I kind of feel like we keep</p> <p>9 getting some of the same questions to which I</p> <p>10 feel like I've already answered.</p> <p>11 Q. What --</p> <p>12 A. So --</p> <p>13 Q. Go ahead. Finish.</p> <p>14 A. So, no, I don't think there are,</p> <p>15 because there isn't a model that's</p> <p>16 acceptable.</p> <p>17 Q. What does sensitization have to</p> <p>18 do with the development of cancer?</p> <p>19 A. I just stated that sensitizers</p> <p>20 can cause inflammation and oxidative stress,</p> <p>21 which are associated with a greater risk of</p> <p>22 cancer.</p> <p>23 Q. Are you aware of any studies</p> <p>24 relating to how sensitizers are related to</p>
Page 315	Page 317
<p>1 Q. If any were vaginal irritants,</p> <p>2 that would be information in your appendices.</p> <p>3 Correct?</p> <p>4 A. Presuming I found that, yeah.</p> <p>5 Q. As you sit here, you're not --</p> <p>6 you don't at least have a recollection of</p> <p>7 having found that?</p> <p>8 A. There was --</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. Yeah, there was such little</p> <p>11 information available on vaginal</p> <p>12 administration of this, I don't recall that</p> <p>13 any -- if any of them were vaginal irritants.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. Sensitizers. In your report,</p> <p>16 Section 4.5, you discuss the fragrance</p> <p>17 chemicals that are classified as sensitizers.</p> <p>18 Is that right?</p> <p>19 A. Section 4.5 is on sensitizers,</p> <p>20 that's right.</p> <p>21 Q. What does sensitization have to</p> <p>22 do with the development of ovarian cancer?</p> <p>23 A. If you are exposed to a</p> <p>24 sensitizer and you're sensitive to it, it can</p>	<p>1 the development of cancer in humans?</p> <p>2 MS. O'DELL: Object to the form,</p> <p>3 asked and answered.</p> <p>4 A. I feel like I just answered that</p> <p>5 question, so same answer. They cause</p> <p>6 oxidation -- oxidative stress and</p> <p>7 inflammation.</p> <p>8 BY MR. ZELLERS:</p> <p>9 Q. My question, though, is: Are</p> <p>10 you aware of any studies that demonstrate</p> <p>11 that, sensitizers and the development of</p> <p>12 cancer?</p> <p>13 A. I would have --</p> <p>14 MS. O'DELL: Asked and answered.</p> <p>15 A. Yeah. I would have to provide</p> <p>16 the same response, and I feel like I've</p> <p>17 answered the question, so --</p> <p>18 BY MR. ZELLERS:</p> <p>19 Q. And I don't --</p> <p>20 A. In humans?</p> <p>21 Q. -- mean to be disrespectful --</p> <p>22 A. Are you asking in humans?</p> <p>23 Q. In humans, yes. In humans,</p> <p>24 you're not aware of any studies. Correct?</p>

Page 318	Page 320
<p>1 A. You know, again, this is an 2 ethics question. I -- I don't think the FDA 3 would let me take, for example, Peru balsam 4 and, you know, gavage a female's ovaries. I 5 don't think that they would ever approve that 6 protocol, and I think if I did submit one to 7 them like that, I don't think any of my 8 subsequent protocols would ever be 9 considered.</p> <p>10 MR. ZELLERS: Move to strike as 11 nonresponsive.</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. My question simply was: Are you 14 aware of any human study of sensitizers and 15 the development of cancer?</p> <p>16 I believe your answer is "no." 17 Correct?</p> <p>18 A. No. You're not ethically 19 allowed to do that.</p> <p>20 Q. Are you aware of any studies? 21 MS. O'DELL: He just answered 22 it.</p> <p>23 MR. ZELLERS: What did he say, 24 Ms. O'Dell? What was his answer?</p>	<p>1 basis. Some of that information was made 2 available in the underlying data that I 3 looked at where they published the -- the 4 no-adverse-event level.</p> <p>5 I did find some where it varied 6 study to study. So it -- it, again, is -- is 7 information that was available in some of the 8 reports. Some of it, the underlying data 9 wasn't present.</p> <p>10 Q. The studies that you found for 11 each of the chemicals you referenced in the 12 appendices. Correct?</p> <p>13 A. Where I found them, yes, sir.</p> <p>14 Q. You did not make any 15 determination that a sensitizer can cause or 16 contribute to ovarian cancer in humans. Is 17 that right?</p> <p>18 MS. O'DELL: Object to the form, 19 asked --</p> <p>20 A. The same question that I've 21 answered previously. The same answer.</p> <p>22 BY MR. ZELLERS:</p> <p>23 Q. And the answer is "no." 24 Correct?</p>
Page 319	Page 321
<p>1 MS. O'DELL: His answer, "No. 2 You're not ethically allowed to do 3 that."</p> <p>4 MR. ZELLERS: All right. Is his 5 answer, no, there are no such studies?</p> <p>6 MS. O'DELL: I think he said, 7 "No," period, "You're not ethically 8 allowed to do that."</p> <p>9 MR. ZELLERS: Okay. If he 10 said --</p> <p>11 MS. O'DELL: I'm reading back 12 his answer from the court reporter.</p> <p>13 MR. ZELLERS: If he said, "No," 14 period, then I'm okay with that.</p> <p>15 MS. O'DELL: Do you need to 16 clarify that, Dr. Crowley?</p> <p>17 A. There are no studies because 18 you're not allowed to do the study.</p> <p>19 BY MR. ZELLERS:</p> <p>20 Q. Thank you. For each of these 21 chemicals, these sensitizers, do you know how 22 much exposure is necessary to cause 23 sensitization?</p> <p>24 A. It varies on a case-by-case</p>	<p>1 A. We can go back through my 2 testimony.</p> <p>3 Q. Well, I'm talking about --</p> <p>4 A. There are no studies --</p> <p>5 Q. Go ahead.</p> <p>6 A. There are no studies because 7 they are unethical.</p> <p>8 Q. What is the basis for your 9 opinion that chemicals that cause 10 sensitization cause inflammation?</p> <p>11 MS. O'DELL: Object to the form, 12 asked and answered.</p> <p>13 A. It's an insult to tissue or a 14 cell, and inflammation is a response as part 15 of that, as is, in many cases, oxidative 16 stress.</p> <p>17 BY MR. ZELLERS:</p> <p>18 Q. Section 4.6 of your report, you 19 discuss that -- the fragrance chemicals that 20 are classified as allergens. Is that right?</p> <p>21 A. Yep.</p> <p>22 Q. Allergens only produce a 23 response in individuals who are allergic to 24 the substance. Is that right?</p>

Michael Crowley, Ph.D.

Page 322	Page 324
<p>1 A. That's correct.</p> <p>2 Q. You did not make any assessment</p> <p>3 as to how much exposure is necessary to cause</p> <p>4 an allergic response with these allergens.</p> <p>5 Is that right?</p> <p>6 MS. O'DELL: Object to the form.</p> <p>7 A. Yeah. I couldn't do that</p> <p>8 because J&amp;J didn't provide the information,</p> <p>9 as we've discussed.</p> <p>10 BY MR. ZELLERS:</p> <p>11 Q. Any studies that you're relying</p> <p>12 on to classify these chemicals as allergens,</p> <p>13 would they be referenced in your appendices?</p> <p>14 A. Yes, where -- where identified,</p> <p>15 yeah.</p> <p>16 Q. You are not expressing an</p> <p>17 opinion that exposure to an allergen can</p> <p>18 cause or contribute to ovarian cancer.</p> <p>19 Correct?</p> <p>20 A. That's --</p> <p>21 MS. O'DELL: Object to the form.</p> <p>22 A. Yeah, that's correct. I'm not</p> <p>23 expressing that opinion.</p> <p>24</p>	<p>1 studies that I looked at.</p> <p>2 Q. If it was referenced in the</p> <p>3 studies you looked at, you would include it</p> <p>4 in your appendices?</p> <p>5 A. I tried to, yeah.</p> <p>6 Q. With respect to Shower to Shower</p> <p>7 or baby powder, you did not make any</p> <p>8 assessment as to whether there was sufficient</p> <p>9 exposure to result in a critical effect.</p> <p>10 Correct?</p> <p>11 A. Yeah, I couldn't --</p> <p>12 MS. O'DELL: Object to the form.</p> <p>13 A. I couldn't do that because I</p> <p>14 didn't have the information from J&amp;J to</p> <p>15 enable to do that.</p> <p>16 THE REPORTER: Try and keep your</p> <p>17 voice up when giving your answer,</p> <p>18 please.</p> <p>19 THE WITNESS: Sorry about that.</p> <p>20 BY MR. ZELLERS:</p> <p>21 Q. As best you can tell,</p> <p>22 phototoxicity is not related to ovarian</p> <p>23 cancer. Correct?</p> <p>24 A. I'm sorry. Say that again.</p>
Page 323	Page 325
<p>1 BY MR. ZELLERS:</p> <p>2 Q. Section 4.7, you identify a</p> <p>3 number of components that IFRA has designated</p> <p>4 as having a critical effect. Is that right?</p> <p>5 A. Yes.</p> <p>6 Q. According to Table 11, those</p> <p>7 critical effects are sensitization, dermal</p> <p>8 sensitization, and phototoxicity. Correct?</p> <p>9 A. There's also one with a</p> <p>10 potential for nitrosamine formation.</p> <p>11 THE REPORTER: I'm sorry. Say</p> <p>12 it again.</p> <p>13 THE WITNESS: Potential for</p> <p>14 nitrosamine formation.</p> <p>15 BY MR. ZELLERS:</p> <p>16 Q. For each of these chemicals, do</p> <p>17 you know how much exposure is necessary to</p> <p>18 cause the given critical effect?</p> <p>19 A. Are you asking about from baby</p> <p>20 powder or Shower to Shower, or are you asking</p> <p>21 about pure chemical?</p> <p>22 Q. The first question is pure</p> <p>23 chemical.</p> <p>24 A. Yeah, some of that was in the</p>	<p>1 Q. Phototoxicity is not related to</p> <p>2 ovarian cancer. Correct?</p> <p>3 A. To the best of my knowledge,</p> <p>4 yeah.</p> <p>5 Q. IFRA Category 5 restriction,</p> <p>6 Section 4.8, you identify a number of</p> <p>7 components for which IFRA has established a</p> <p>8 Category 5 restriction. Is that right?</p> <p>9 A. Yes.</p> <p>10 Q. That means IFRA has capped the</p> <p>11 usage levels due to concerns about dermal</p> <p>12 sensitization or allergic response. Is that</p> <p>13 right?</p> <p>14 A. I don't know that that's the</p> <p>15 only two concerns that they cited in putting</p> <p>16 these Category 5 caps in place, because</p> <p>17 Category 5 includes not just baby powder and</p> <p>18 talcs, but facial creams, facial makeup, hand</p> <p>19 creams, facial masks, hair -- hair permanent.</p> <p>20 I think there are a lot of factors.</p> <p>21 Q. For each of these chemicals, do</p> <p>22 you know how much exposure is necessary to</p> <p>23 cause an allergic or sensitization response?</p> <p>24 A. Again, it's case by case, and</p>

82 (Pages 322 to 325)



Michael Crowley, Ph.D.

Page 326	Page 328
<p>1 the underlying information is, generally</p> <p>2 speaking, available.</p> <p>3 Q. You have no opinion, though,</p> <p>4 with respect to any of these chemicals in</p> <p>5 baby powder or Shower to Shower as to whether</p> <p>6 or not there is a sufficient exposure to</p> <p>7 cause an allergic or sensitization response.</p> <p>8 Correct?</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. You know, if your client wants</p> <p>11 to provide me that information, perhaps I</p> <p>12 could make that judgment, but I don't have</p> <p>13 it.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. If IFRA relied on studies in</p> <p>16 setting these Category 5 restrictions on the</p> <p>17 chemicals you identify in your report, you</p> <p>18 attempted to include that in your appendices?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A. Yes, I did.</p> <p>21 BY MR. ZELLERS:</p> <p>22 Q. Do you know whether the studies</p> <p>23 that IFRA looked at on setting these</p> <p>24 Category 5 restrictions were studies</p>	<p>1 have been glued to talc particles,</p> <p>2 administered to the peritoneal area, which</p> <p>3 subsequently enters the vagina, and where</p> <p>4 that talc particle goes, those fragrance</p> <p>5 chemicals go with it. They have</p> <p>6 demonstrated -- many of them -- demonstrated</p> <p>7 biological activity in animal and in vitro</p> <p>8 cell models that demonstrates toxicity and</p> <p>9 carcinogenicity.</p> <p>10 And so -- excuse me. I'm not</p> <p>11 done yet. I don't know how else to state it.</p> <p>12 I think they can absolutely contribute to the</p> <p>13 carcinogenicity of the product in total.</p> <p>14 BY MR. ZELLERS:</p> <p>15 Q. In this section, in terms of the</p> <p>16 carcinogenicity, you do not know or have any</p> <p>17 information as to whether any of these</p> <p>18 ingredients in Johnson's baby powder or</p> <p>19 Shower to Shower exceed the IFRA</p> <p>20 restrictions. Correct?</p> <p>21 MS. O'DELL: Object to the form.</p> <p>22 A. Yeah, I don't know because I was</p> <p>23 never given the composition by Johnson &amp;</p> <p>24 Johnson.</p>
Page 327	Page 329
<p>1 involving a pure concentration of the</p> <p>2 substance or a diluted substance?</p> <p>3 A. You know, it was both. I mean,</p> <p>4 IFRA publishes a lot of these studies in</p> <p>5 peer-reviewed journals, you know, as opposed</p> <p>6 to CIR, which doesn't always do that. So, I</p> <p>7 mean, there's some transparency there with</p> <p>8 IFRA. So you can go read those in the</p> <p>9 Journal of Food Science and Toxicology,</p> <p>10 whatever it's called.</p> <p>11 So, yeah, all those are</p> <p>12 disclosed in the peer-reviewed literature. I</p> <p>13 did review them where possible.</p> <p>14 Q. You're not expressing an opinion</p> <p>15 as to whether or not the chemical substances</p> <p>16 that you identify in this section of your</p> <p>17 report, 4.8, either cause or contribute to</p> <p>18 ovarian cancer. Correct?</p> <p>19 MS. O'DELL: Object to the form.</p> <p>20 A. Actually, I am. I mean, I've</p> <p>21 stated fairly clearly, I feel, that, you</p> <p>22 know, you've got a whole bunch of irritants,</p> <p>23 you've got a whole bunch of sensitizers, and</p> <p>24 you've got a whole bunch of allergens that</p>	<p>1 BY MR. ZELLERS:</p> <p>2 Q. With respect to the chemicals</p> <p>3 that are identified in this section of your</p> <p>4 report dealing with the IFRA Category 5</p> <p>5 restrictions, you have no information that</p> <p>6 the amount of the chemical in baby powder or</p> <p>7 Shower to Shower exceeded the IFRA</p> <p>8 restrictions. Correct?</p> <p>9 MS. O'DELL: Object to the form.</p> <p>10 A. Isn't that the same question you</p> <p>11 just asked?</p> <p>12 BY MR. ZELLERS:</p> <p>13 Q. Can you answer the question?</p> <p>14 MS. O'DELL: He previously</p> <p>15 answered the question. I'll object as</p> <p>16 asked and answered. You may repeat</p> <p>17 your answer, Dr. Crowley. You can</p> <p>18 refer back and ask the court reporter</p> <p>19 to repeat the answer, whichever you</p> <p>20 prefer.</p> <p>21 A. I think that -- I believe that</p> <p>22 I've answered this close to 15 times today,</p> <p>23 maybe -- maybe nearly 20.</p> <p>24 I've not been provided with the</p>

83 (Pages 326 to 329)



Michael Crowley, Ph.D.

Page 330	Page 332
<p>1 quantitative composition of the Johnson &amp; 2 Johnson fragrance mix in the baby powder or 3 Shower to Shower product. I can't make any 4 judgments to that without that, as I think 5 you well know. 6 BY MR. ZELLERS: 7 Q. In this section -- 8 A. So I can't determine if the 9 Category 5 restrictions have been exceeded or 10 not without that information. Right? 11 Q. In the Category 5 restrictions, 12 dose or concentration would be important to 13 your analysis. Is that right? 14 MS. O'DELL: Objection to form. 15 A. So, for example, cinnamal has a 16 Category 5 restriction of 0.05 percent. 17 Since I don't know how much is present, I 18 can't make a judgment as to whether the 19 cinnamal present in baby powder exceeds 20 0.05 percent or not. There's a bunch of 21 other fragrance chemicals here too that have 22 these restrictions similar to Shower to 23 Shower. Let's save each other some time. I 24 can't make that judgment because your client</p>	<p>1 FDA inactive ingredient list, it is likely to 2 contribute to the development of ovarian 3 cancer. Correct? 4 MS. O'DELL: Object to the form. 5 A. So I can't understand the 6 question because you've got two notes, so 7 maybe just ask me what my opinion is. 8 BY MR. ZELLERS: 9 Q. Well, you expressed your opinion 10 in your report. Is that right? 11 A. Yes. 12 Q. Is it your opinion that an 13 ingredient that's not listed on the FDA 14 inactive ingredient list is likely to 15 contribute to the development of ovarian 16 cancer? 17 A. You asked me if it's my opinion 18 that if it's absent from that IID it's likely 19 to cause ovarian cancer? 20 Q. Correct. 21 MS. O'DELL: Object to the form. 22 BY MR. ZELLERS: 23 Q. That's not your opinion, is it? 24 A. No.</p>
Page 331	Page 333
<p>1 hasn't given me the information to be able to 2 do that. 3 BY MR. ZELLERS: 4 Q. In your report, Section 4.10, 5 you discuss the FDA inactive ingredient list. 6 Is that right? 7 A. Yes. 8 Q. The ingredients that you list 9 are only included if they are used in 10 FDA-approved drug products. Is that right? 11 A. That's correct. 12 Q. Most FDA-approved drug products 13 do not use fragrances. Is that right? 14 MS. O'DELL: Object to the form. 15 A. You know, I don't know what 16 percentage use a fragrance. They're all 17 chemicals. Right? So they're inactive 18 ingredients, supposedly, right, or inert -- 19 although, certainly not all of them, but many 20 of them have buffers, and film formers are 21 often used, too. 22 BY MR. ZELLERS: 23 Q. You're not expressing an opinion 24 that if an ingredient is not listed on the</p>	<p>1 MR. ZELLERS: I have no further 2 questions. Thank you. 3 MR. FERGUSON: Why don't we go 4 off the record for a second, please. 5 MS. O'DELL: Yeah. 6 THE VIDEOGRAPHER: Going off the 7 record, the time is 5:04 p.m. 8 (Recess from 5:04 p.m. to 9 5:18 p.m.) 10 THE VIDEOGRAPHER: Back on the 11 record. The time is 5:18 p.m. 12 --- 13 EXAMINATION 14 --- 15 BY MR. FERGUSON: 16 Q. Dr. Crowley, my name is Ken 17 Ferguson, and along with Mr. Donath to my 18 right, I represent Imerys. Do you understand 19 that? 20 A. Yes. 21 Q. Do you know who Imerys is? 22 A. Yes. 23 Q. Tell me what your understanding 24 is.</p>

84 (Pages 330 to 333)

Michael Crowley, Ph.D.

Page 334	Page 336
<p>1 A. It's a company that mines talc 2 and sells talc. 3 Q. So over the course of the day, 4 we've been discussing your opinions as 5 expressed in your testimony today and your 6 report relating to the fragrance chemicals 7 that you stated are included in Johnson's 8 baby powder and formerly Shower to Shower. 9 Correct? 10 A. Yes. 11 Q. And would you agree your 12 opinions in this case that you will express 13 in your testimony as well as your report only 14 relate to fragrance chemicals? 15 A. Yes, to a certain extent. 16 Q. All right. Well, I better ask 17 about that. What do you mean by "to a 18 certain extent"? 19 A. Yeah. So some of these 20 fragrance chemicals have been identified as 21 carcinogens, meaning if another material is 22 present that is carcinogenic, they promote 23 its carcinogenic activity. 24 Q. Well, let me put it this way.</p>	<p>1 flotation process as you described it, but 2 you ran out of time. Correct? 3 A. That's correct. 4 Q. And I think in your testimony, 5 the way you put it -- I just want to make 6 sure I understand -- you said you won't be 7 expressing an opinion on the flotation 8 process today. Is it fair there's nothing 9 about the flotation process in your report? 10 Correct? 11 A. That's correct. 12 Q. And in this case -- for purposes 13 of your testimony in this case, you don't 14 intend to address the flotation process. 15 Correct? 16 A. I suppose if I'm asked I'll 17 answer the questions based on what I did 18 review. 19 Q. Well, since it's not contained 20 in your report, I'm sure the attorneys would 21 not want us to ask you questions about it in 22 that sense, but let me -- well, let me put it 23 this way. 24 You did not complete your work</p>
Page 335	Page 337
<p>1 First of all, your -- the title of your 2 report says "Rule 26 Report of Michael M. 3 Crowley, Ph.D. Regarding the Fragrance 4 Chemical Constituents in Johnson &amp; Johnson 5 Talcum Powder Products." Correct? 6 A. Yes. 7 Q. And you stand by that title for 8 your report. Correct? 9 A. Yes. 10 MS. O'DELL: Object to the form. 11 A. Yeah. 12 BY MR. FERGUSON: 13 Q. You have no opinions that relate 14 to the talc as it was supplied to Johnson &amp; 15 Johnson Consumer Companies. Correct? 16 A. That's correct. 17 Q. So no opinions about the talc 18 before the fragrance chemicals were added. 19 Fair? 20 A. That's correct. 21 Q. Now, at one point in your 22 testimony earlier today, you said that you 23 had -- and I'm not sure exactly how you put 24 it. You were intending to look at the</p>	<p>1 that you were considering doing regarding the 2 flotation process. Correct? 3 A. That's correct. 4 Q. Because you ran out of time. 5 Correct? 6 A. Yes. 7 Q. And so your work with regard to 8 the flotation process as it relates to the 9 talc was not -- was not completed? 10 MS. O'DELL: Object to the form, 11 asked and answered. 12 A. Yeah, that's correct. 13 BY MR. FERGUSON: 14 Q. You indicated earlier that your 15 initial contact on -- regarding this case was 16 from Margaret Thompson. Correct? 17 A. Yes. 18 Q. Did you know Margaret Thompson 19 before you were contacted about working on 20 this case? 21 A. No. 22 Q. You talked about the fact that 23 you had read Dr. Thomas Dydek's report. 24 Correct?</p>

85 (Pages 334 to 337)

Page 338	Page 340
<p>1 A. Yes.</p> <p>2 Q. Before you read Dr. Dydek's</p> <p>3 report, were you acquainted with him at all?</p> <p>4 A. No.</p> <p>5 Q. Since you've read his report,</p> <p>6 have you been -- have you met him? Have you</p> <p>7 talked to him at all?</p> <p>8 A. No.</p> <p>9 Q. How about a Dr. Alan Campion who</p> <p>10 is at The University of Texas, I believe? Do</p> <p>11 you know Dr. Campion?</p> <p>12 A. I have met Dr. Campion.</p> <p>13 Q. Okay. Can you just tell me in</p> <p>14 general what the circumstances were?</p> <p>15 A. I met him when I was in graduate</p> <p>16 school, and shockingly I ended up sitting</p> <p>17 next to him on a plane on our way to a</p> <p>18 conference about ten years ago.</p> <p>19 Q. Have you had any discussions</p> <p>20 with Dr. Campion regarding your work in this</p> <p>21 matter?</p> <p>22 A. No.</p> <p>23 Q. Do you know whether or not he is</p> <p>24 an expert witness who has been listed in this</p>	<p>1 said, or would you like me to repeat myself?</p> <p>2 A. I heard you okay, but it did get</p> <p>3 muffled at a few points, so we should</p> <p>4 probably take our time.</p> <p>5 Q. Okay. Thank you, Dr. Crowley.</p> <p>6 So what I said before is that I am Renee</p> <p>7 Appel, and I represent Personal Care Products</p> <p>8 Counsel, and I had a few follow-up questions</p> <p>9 for you.</p> <p>10 A. Okay.</p> <p>11 Q. The CIR is not a federal agency.</p> <p>12 Correct?</p> <p>13 A. That's correct.</p> <p>14 Q. So the CIR has no regulatory</p> <p>15 authority. Correct?</p> <p>16 A. That's correct.</p> <p>17 MS. APPEL: Okay. That's it.</p> <p>18 MR. ZELLERS: Anyone else?</p> <p>19 MS. O'DELL: I have questions,</p> <p>20 so --</p> <p>21 MR. ZELLERS: Go ahead.</p> <p>22 MS. O'DELL: Do you have an</p> <p>23 objection to that?</p> <p>24 MR. ZELLERS: Well -- no, I</p>
Page 339	Page 341
<p>1 matter?</p> <p>2 A. I believe he has.</p> <p>3 MR. FERGUSON: I think that's</p> <p>4 all I have. Thank you, Dr. Crowley.</p> <p>5 THE WITNESS: You're welcome.</p> <p>6 MR. ZELLERS: Apparently --</p> <p>7 Ms. Appel, do you have some questions</p> <p>8 or any questions?</p> <p>9 MS. APPEL: Yes, please, very</p> <p>10 briefly.</p> <p>11 ---</p> <p>12 EXAMINATION</p> <p>13 ---</p> <p>14 BY MS. APPEL:</p> <p>15 Q. Hi, again, Dr. Crowley. Renee</p> <p>16 Appel. I represent Personal Care Products</p> <p>17 Counsel. I just had a few questions for you.</p> <p>18 A. Okay.</p> <p>19 Q. Can you hear me okay?</p> <p>20 MS. O'DELL: Actually, we</p> <p>21 couldn't hear that, so if you could</p> <p>22 speak up, please. Thank you.</p> <p>23 BY MS. APPEL:</p> <p>24 Q. Did you hear anything I just</p>	<p>1 don't have an objection.</p> <p>2 MS. O'DELL: Did you expect -- I</p> <p>3 was just wondering why you -- if</p> <p>4 anybody else has questions. I'm going</p> <p>5 to ask Dr. Crowley some questions,</p> <p>6 but -- okay? All right. Great.</p> <p>7 ---</p> <p>8 EXAMINATION</p> <p>9 ---</p> <p>10 BY MS. O'DELL:</p> <p>11 Q. Dr. Crowley, I have a few</p> <p>12 questions I'd like to ask you just to clarify</p> <p>13 some of your testimony from earlier today.</p> <p>14 Let me just start at the</p> <p>15 beginning and just ask for you to tell us a</p> <p>16 little bit about your qualifications in terms</p> <p>17 of chemicals and chemicals that are used in</p> <p>18 fragrances, pharmaceuticals, other</p> <p>19 flavorants.</p> <p>20 A. Sure. I have a Bachelor's</p> <p>21 degree in chemistry, a Master's degree in</p> <p>22 organic chemistry. My Doctorate is in</p> <p>23 molecular pharmaceuticals. All three of those</p> <p>24 disciplines deal with chemicals and their</p>

Michael Crowley, Ph.D.

Page 342	Page 344
<p>1 biological properties. I have worked with</p> <p>2 flavors and fragrances throughout my career,</p> <p>3 although the primary focus has been on drug</p> <p>4 development. I have worked on the</p> <p>5 development of foods, nutritional supplements</p> <p>6 which are regulated as foods, and I've worked</p> <p>7 on cosmetic products as well.</p> <p>8 All of those chemicals that go</p> <p>9 into those types of products are in fact</p> <p>10 chemicals. Whether you call them a flavor or</p> <p>11 a fragrance, they are chemicals.</p> <p>12 Q. And in terms of -- of your</p> <p>13 report, you reference in your report</p> <p>14 fragrance chemicals, but by using that</p> <p>15 terminology, what were you really referring</p> <p>16 to?</p> <p>17 A. Well, Johnson &amp; Johnson calls</p> <p>18 them fragrance chemicals, so I utilized their</p> <p>19 term, but they're -- they're chemicals.</p> <p>20 Q. And, in fact, are some of those</p> <p>21 chemicals not actually, quote, fragrance</p> <p>22 chemicals in the technical sense?</p> <p>23 A. That's correct.</p> <p>24 MR. ZELLERS: Objection; form.</p>	<p>1 wasn't very hard because the government makes</p> <p>2 those rules pretty clear, and the industry</p> <p>3 trade groups like IFRA and CIR also, you</p> <p>4 know, provide information to support the use</p> <p>5 of those chemicals in an appropriate fashion.</p> <p>6 THE REPORTER: In an appropriate</p> <p>7 fashion?</p> <p>8 THE WITNESS: Yes.</p> <p>9 BY MS. O'DELL:</p> <p>10 Q. Did you outline the results of</p> <p>11 your review of the evidence in your report as</p> <p>12 well as the appendices that's attached to</p> <p>13 your report?</p> <p>14 A. Yes.</p> <p>15 Q. And you referred to data in your</p> <p>16 appendices earlier today -- actually,</p> <p>17 throughout your testimony. And would that</p> <p>18 data include the information that is located</p> <p>19 at the links that you provided in your</p> <p>20 appendices?</p> <p>21 A. Yes.</p> <p>22 Q. So in addition to what's</p> <p>23 actually listed in the appendices, the data</p> <p>24 that is contained in the link that you</p>
Page 343	Page 345
<p>1 A. That's correct, they aren't --</p> <p>2 there are some that are clearly not</p> <p>3 fragrances.</p> <p>4 BY MS. O'DELL:</p> <p>5 Q. And -- and what were you asked</p> <p>6 to do in giving your opinions in this case?</p> <p>7 A. So the two questions in my</p> <p>8 report. You know, are the products in</p> <p>9 compliance with established industry and</p> <p>10 regulatory standards, the first question.</p> <p>11 And the second question was what are the</p> <p>12 properties of the fragrance chemicals, and do</p> <p>13 they contribute to the inflammatory</p> <p>14 properties, toxicity, and potential</p> <p>15 carcinogenicity of the talcum powder</p> <p>16 products.</p> <p>17 So that included looking at the</p> <p>18 physical and chemical properties, reviewing</p> <p>19 all of the available literature, including</p> <p>20 some literature that was only available via</p> <p>21 purchase or access to proprietary databases.</p> <p>22 Reviewing that, and then forming my opinion</p> <p>23 based upon that.</p> <p>24 The regulation portion of this</p>	<p>1 included would also be material that you</p> <p>2 reviewed and considered in reaching your</p> <p>3 opinions?</p> <p>4 A. Yes.</p> <p>5 Q. Now, in reviewing the list of</p> <p>6 chemicals or starting with that list of</p> <p>7 chemicals, I mean -- let me just -- let me</p> <p>8 back up and just strike that and start again.</p> <p>9 Are fragrance formulas closely</p> <p>10 held trade secrets?</p> <p>11 MR. ZELLERS: Objection; form.</p> <p>12 A. Yes, oftentimes they are.</p> <p>13 BY MS. O'DELL:</p> <p>14 Q. In the case of Johnson's baby</p> <p>15 powder's fragrance, as well as Shower to</p> <p>16 Shower's fragrance, is that -- the</p> <p>17 information about the formula that you used</p> <p>18 for those fragrances something that</p> <p>19 necessarily would have to be provided by</p> <p>20 Johnson &amp; Johnson?</p> <p>21 A. It would have been useful, but</p> <p>22 it wasn't.</p> <p>23 Q. In the data that you were</p> <p>24 provided initially to undertake the work that</p>

87 (Pages 342 to 345)

Michael Crowley, Ph.D.

<p style="text-align: right;">Page 346</p> <p>1 you've done in this case was actually</p> <p>2 provided through a pleading that was issued</p> <p>3 by Johnson &amp; Johnson in a state court case in</p> <p>4 St. Louis. Correct?</p> <p>5 A. Is that the Ingham --</p> <p>6 MS. O'DELL: Yeah. Let me ask</p> <p>7 if I can have some exhibit stickers,</p> <p>8 please?</p> <p>9 MR. ZELLERS: Oh, yes, exhibit</p> <p>10 stickers. Yes.</p> <p>11 MS. O'DELL: Thank you.</p> <p>12 (Exhibit No. 32 marked)</p> <p>13 BY MS. O'DELL:</p> <p>14 Q. Let me show you what I'm marking</p> <p>15 as Exhibit 32. Is this information that was</p> <p>16 provided to you in order to learn the</p> <p>17 chemicals that were included in both Shower</p> <p>18 to Shower and Johnson's baby powder?</p> <p>19 A. Yes.</p> <p>20 Q. And if you'll turn to Page 2 of</p> <p>21 the document, according to this answer to</p> <p>22 Interrogatory 19, this is -- this list of</p> <p>23 chemicals provided was the current fragrance</p> <p>24 composition for Johnson's baby powder?</p>	<p style="text-align: right;">Page 348</p> <p>1 Q. It was a bad question. Look at</p> <p>2 Page 7, if you don't mind.</p> <p>3 A. Okay.</p> <p>4 Q. Was the information provided in</p> <p>5 Exhibit 32 information that attorneys for</p> <p>6 Johnson &amp; Johnson provided to the plaintiffs</p> <p>7 in that case?</p> <p>8 MR. ZELLERS: Form and</p> <p>9 foundation objection.</p> <p>10 A. That's what it looks like. It</p> <p>11 says, "Respectfully submitted" by the names</p> <p>12 of three attorneys who are labeled as</p> <p>13 attorneys for defendants Johnson &amp; Johnson</p> <p>14 and Johnson &amp; Johnson Consumer Companies, now</p> <p>15 known as Johnson &amp; Johnson Consumer,</p> <p>16 Incorporated.</p> <p>17 BY MS. O'DELL:</p> <p>18 Q. Was this the list of chemicals</p> <p>19 that you utilized for the majority of the</p> <p>20 time you were doing your evaluation of these</p> <p>21 chemical components?</p> <p>22 MR. ZELLERS: Objection; form.</p> <p>23 A. Yes.</p> <p>24</p>
<p style="text-align: right;">Page 347</p> <p>1 A. That's correct.</p> <p>2 Q. And this listing does not</p> <p>3 include information about the concentration</p> <p>4 of the particular chemicals in the baby</p> <p>5 powder fragrance?</p> <p>6 A. That's correct.</p> <p>7 Q. And is that also true as it</p> <p>8 relates to this answer to interrogatory</p> <p>9 regarding Shower to Shower?</p> <p>10 A. Yes.</p> <p>11 Q. And is this information that was</p> <p>12 provided to the plaintiffs and to the Court</p> <p>13 in the Circuit Court of the City of St. Louis</p> <p>14 by attorneys for Johnson &amp; Johnson and</p> <p>15 Johnson &amp; Johnson Consumer, Inc.?</p> <p>16 MR. ZELLERS: Objection; form,</p> <p>17 foundation.</p> <p>18 BY MS. O'DELL:</p> <p>19 Q. Well, I'll just ask you -- I'll</p> <p>20 address the objection. If you'll look at</p> <p>21 Page --</p> <p>22 A. I don't understand the question.</p> <p>23 Q. Well, let me ask it again.</p> <p>24 A. Okay.</p>	<p style="text-align: right;">Page 349</p> <p>1 BY MS. O'DELL:</p> <p>2 Q. And shortly prior to the</p> <p>3 disclosure of your report, did you receive</p> <p>4 another list of fragrance ingredients for</p> <p>5 both baby powder and Shower to Shower?</p> <p>6 A. I don't know if I'd call it</p> <p>7 another list. I received a second list.</p> <p>8 Yeah, I guess another list.</p> <p>9 Q. Yeah. Fair, it's hard to know</p> <p>10 how to characterize it. But I'll represent</p> <p>11 to you --</p> <p>12 (Exhibit No. 33 marked)</p> <p>13 BY MS. O'DELL:</p> <p>14 Q. This is Exhibit 33. This is a</p> <p>15 list of chemicals that were provided by</p> <p>16 Johnson &amp; Johnson's lawyer, Mr. Wyatt's</p> <p>17 partner, Richard Bernardo, after plaintiffs,</p> <p>18 in the multi-district litigation, had asked</p> <p>19 for the formula itself, including the</p> <p>20 concentration of chemicals.</p> <p>21 This -- would you just describe</p> <p>22 for the jury and the Judge, certainly, what</p> <p>23 this -- the information in this list contains</p> <p>24 or this exhibit contains for the chemicals in</p>



Michael Crowley, Ph.D.

Page 350	Page 352
<p>1 Johnson's baby powder?</p> <p>2 A. Okay. So there's -- there's</p> <p>3 four columns. The first column is a</p> <p>4 description of the fragrance chemical. The</p> <p>5 second column is labeled "minimum," the third</p> <p>6 column is labeled "maximum," and the fourth</p> <p>7 column is the CAS number that we spoke about</p> <p>8 earlier today.</p> <p>9 Q. And are there units that have</p> <p>10 been supplied in order to understand what the</p> <p>11 minimum and maximum amount --</p> <p>12 A. No. You don't know whether</p> <p>13 that's parts per million, percent,</p> <p>14 milligrams, micrograms, femtograms, or some</p> <p>15 other unit of measure.</p> <p>16 Q. Would that information be</p> <p>17 critical in order to understand the</p> <p>18 concentrations of the specific chemicals in</p> <p>19 the fragrance?</p> <p>20 A. Yes, along with other pieces of</p> <p>21 information, too. That would be one -- one</p> <p>22 important part of doing that analysis.</p> <p>23 Q. And is that information that</p> <p>24 could only be provided by Johnson &amp; Johnson,</p>	<p>1 insufficient to understand the concentrations</p> <p>2 or other relevant facts about the chemicals?</p> <p>3 A. Yes.</p> <p>4 (Exhibit No. 35 marked)</p> <p>5 BY MS. O'DELL:</p> <p>6 Q. Okay. Now, I want to show you</p> <p>7 one last document -- and I'm marking that as</p> <p>8 Exhibit 35 -- and ask you to identify that.</p> <p>9 A. Exhibit 35 is titled "Changes to</p> <p>10 Johnson &amp; Johnson's Baby Powder Fragrance</p> <p>11 Ingredients."</p> <p>12 Q. Did you take into consideration</p> <p>13 these historical changes in the baby powder</p> <p>14 formulation when you reached your opinions in</p> <p>15 this case?</p> <p>16 A. Yes. I mean, I only had -- I</p> <p>17 think I had them for three days before the</p> <p>18 report was due, so it was kind of rushed.</p> <p>19 But what I saw was that from 2008 to 2014,</p> <p>20 there were only minimal changes, and even</p> <p>21 with this information, it didn't look like</p> <p>22 there was any substantial change other than</p> <p>23 styrene was changed styrene oil. You know,</p> <p>24 Galaxolide 50 DEP I presumed to mean that it</p>
Page 351	Page 353
<p>1 who is essentially the owner of the</p> <p>2 fragrance?</p> <p>3 MR. ZELLERS: Form, objection.</p> <p>4 A. I suppose so.</p> <p>5 (Exhibit No. 34 marked)</p> <p>6 BY MS. O'DELL:</p> <p>7 Q. I want to show you what I've</p> <p>8 marked as Exhibit 34. This is a listing of</p> <p>9 chemicals very similar to Exhibit 34. And</p> <p>10 just to make sure I didn't misstate that,</p> <p>11 this is Exhibit 35 that I handed to you. Is</p> <p>12 that a list of chemicals --</p> <p>13 A. It's Exhibit 34.</p> <p>14 Q. Is it?</p> <p>15 A. The first one was 33, and this</p> <p>16 one is 34.</p> <p>17 Q. All right. Thank you. Is</p> <p>18 Exhibit 34 a similar list of chemicals</p> <p>19 that -- for Shower to Shower?</p> <p>20 A. Yes.</p> <p>21 Q. And does it provide essentially</p> <p>22 the same information?</p> <p>23 A. Yes.</p> <p>24 Q. And is that information also</p>	<p>1 was the Galaxolide dissolved at a 50 percent</p> <p>2 level in diethyl phthalate, and that it was</p> <p>3 replaced by Galaxolide 50 BB. I didn't know</p> <p>4 what BB was, but I presumed it was a</p> <p>5 different solvent than diethyl phthalate.</p> <p>6 So even with this information,</p> <p>7 there was not a whole lot that I could</p> <p>8 ascertain from it, but it didn't change my</p> <p>9 opinions.</p> <p>10 Q. And certainly the schedule in</p> <p>11 producing your report was intense, but did</p> <p>12 you have sufficient time to do what was</p> <p>13 necessary to render your opinions in this</p> <p>14 case?</p> <p>15 A. Yes, I did. I mean, more time</p> <p>16 would have been nice, but I was able to get</p> <p>17 the information that I needed to form my</p> <p>18 opinions and had more than sufficient</p> <p>19 information on which to base them.</p> <p>20 I did want to make one last</p> <p>21 comment about Exhibit 35.</p> <p>22 Q. Go ahead.</p> <p>23 A. It looks like styrene --</p> <p>24 MR. ZELLERS: Objection.</p>



Page 354	Page 356
<p>1 BY MS. O'DELL: 2 Q. If you have comments about 3 Exhibit 35, please share them with us. 4 A. Yeah. It looks like styrene was 5 removed from the formula twice, about a week 6 apart. So it got removed on April 8th of 7 2014, and then it got removed again on 8 April 17th. So I didn't know if that meant 9 that the amount was just reduced or if it was 10 completely replaced, and the information 11 really is insufficient to make that judgment. 12 Q. You were asked a number of 13 questions today regarding dose, the amount of 14 a particular concentration of a chemical, and 15 the impact of a dose of that chemical in your 16 analyses. 17 Is -- is information regarding 18 dose essential for your opinions in this 19 case? 20 A. No. 21 Q. Why? 22 A. Well, as I said a bunch of 23 times, I was not provided the information to 24 be able to ascertain a dose. Even more</p>	<p>1 chemicals. Right? So very likely there's 2 additive effects. 3 And then I talked about the fact 4 that the fragrance chemicals have film 5 formers like rosin and Chem 4 present and 6 that they will help adhere the fragrance 7 chemical to the talc product. 8 The rosin was used as a 9 sustained release matrix in the 10 pharmaceutical world to make extended release 11 tablets. It's also being used as a film 12 coating to delay the release of drugs. So 13 that fragrance chemical is going to go with 14 that talc particle wherever it may land, and 15 it's also going to sustain the exposure of 16 the fragrance chemical that may be attached 17 to it. 18 And lastly, you know, I was also 19 asked about the routine, you know -- the 20 exposure, you know, and could I determine, 21 you know, how much was, you know, applied. 22 Typical tox studies and safety studies are 23 short term. They might be multi-day, 24 sometimes up to a couple of weeks or a month.</p>
Page 355	Page 357
<p>1 importantly, the safety studies are absent 2 for vaginal administration. So it's not 3 just, you know, give a certain amount to, you 4 know, the skin or the vaginal area. You do 5 safety studies in animals for the intended 6 route of administration. 7 In addition, content uniformity 8 studies on the fragrance haven't been 9 provided. We asked for those as well. In 10 other words, if you're adding, you know, 11 0.5 -- 0.05 percent styrene to the talc and 12 you make 1,000 kilos of baby powder and you 13 sample the top, middle, and bottom, left, 14 right, and middle, and you draw a sample and 15 measure the uniformity and homogeneity of the 16 baby powder or Shower to Shower, is that 17 fragrance chemical present in a uniform 18 manner in each? 19 Another consideration is, you 20 know, the safety studies are usually single 21 ingredient safety studies. So, you know, if 22 we were to do a safety study of para-Cresol 23 in an animal, it would be simply that. It 24 wouldn't be para-Cresol and another 142 other</p>	<p>1 The FDA has recently published guidances that 2 request safety studies in accord with the 3 frequency of administration -- short term, 4 intermediate and long term. And for chronic 5 administration, the expectation is that 6 they'll do two years. 7 So there have been repeated 8 doses, repeated exposures, and thousands of 9 applications. 10 And lastly, in this matter, baby 11 powder is directed to infants. Shower to 12 Shower is directed towards women. We have 13 two very different anatomies and physiologies 14 in terms of most babies are a little bit 15 smaller than adult women. So all those 16 considerations need to be taken into -- into 17 consideration. 18 Lastly, you know, the question 19 about dose is immaterial with genotoxic 20 materials. As I said earlier, a genotoxic 21 material, there is no threshold for it. A 22 single molecule is sufficient to cause harm. 23 Q. You were asked a series of 24 questions about styrene, and the suggestion</p>

Michael Crowley, Ph.D.

<p style="text-align: right;">Page 358</p> <p>1 was made by counsel for J&amp;J that styrene has 2 not been determined to be harmful in humans. 3 Do you recall that line of questions? 4 A. Yes. 5 Q. You know, has -- what's the 6 current IARC classification for styrene? 7 A. It was recently updated. I 8 think it's now a 2A. 9 Q. And what's a 2A? 10 A. IARC 2A is probably carcinogenic 11 to humans. It means limited evidence of 12 carcinogenicity in humans and sufficient 13 evidence of carcinogenicity in animal studies 14 or inadequate evidence of carcinogenicity in 15 humans and sufficient evidence of 16 carcinogenicity in animals, and strong 17 evidence that the carcinogen is meted by a 18 mechanism that does operate in humans. 19 Q. Has the National Toxicology 20 Program evaluated styrene? 21 A. Yes. 22 Q. And what was their determination 23 in terms of its potential ability to cause 24 cancer?</p>	<p style="text-align: right;">Page 360</p> <p>1 which is GHS. Do you recall that? 2 A. Yes. 3 Q. Is that a commercial database 4 that requires some type of payment in order 5 to be able to obtain all the information? 6 A. I believe so. 7 Q. And that's not information that 8 you had access to. Correct? 9 A. No. I just -- I looked at that 10 work that was in the public domain. 11 Q. And is the information in the 12 public domain that you had available to you 13 the MSDS sheets that were produced by the 14 manufacturers of those substances? 15 A. Yes. 16 Q. And so to the degree that J&amp;J's 17 counsel suggested that somehow you had access 18 to that database, that's not correct? 19 A. That's correct. 20 Q. And that would be something, 21 typically, that would be available only to 22 manufacturers? 23 MR. ZELLERS: Objection; form, 24 foundation.</p>
<p style="text-align: right;">Page 359</p> <p>1 MR. ZELLERS: Objection; form, 2 foundation. 3 BY MS. O'DELL: 4 Q. I'll restate the question. What 5 was the National Toxicology's 6 determination -- Program's determination 7 regarding styrene? 8 A. I'm on Page -- Page -- are you 9 talking about IARC or NTP? 10 Q. NTP. Sorry. 11 A. Sorry. I'm going to have to 12 pull up that. 13 Q. Let me just ask you this 14 question and see if it -- has styrene been 15 determined by NTP to reasonably -- as 16 reasonably anticipated to be a human 17 carcinogen? 18 A. Yes. 19 MR. ZELLERS: Form, foundation, 20 objection. 21 BY MS. O'DELL: 22 Q. You were asked questions, also, 23 in the last segment of J&amp;J's examination 24 about a database that is -- the acronym for</p>	<p style="text-align: right;">Page 361</p> <p>1 A. That's correct, it would be 2 available to those that want to pay for it. 3 BY MS. O'DELL: 4 Q. You were asked questions 5 about -- I believe you referenced this 6 earlier in your testimony, and you used the 7 term "co-carcinogen." What's a 8 co-carcinogen? 9 A. A co-carcinogen is a chemical 10 that by itself may not be carcinogenic, but 11 when administered in the presence of a 12 carcinogen, it increases the carcinogen's 13 activity. 14 Q. Were you asked to do an exposure 15 assessment for any individual plaintiffs? 16 A. No. 17 Q. Were you asked to do any type of 18 an exposure analysis generally? 19 A. No. 20 Q. And as I believe you've 21 testified, that wasn't necessarily -- 22 necessary for the opinions you've rendered in 23 this case? 24 A. No.</p>

91 (Pages 358 to 361)

Michael Crowley, Ph.D.

Page 362	Page 364
<p>1 Q. Do your opinions in this case 2 include those that you've expressed in your 3 report as well as your deposition here today? 4 A. Yes. 5 Q. Do you hold those opinions to a 6 reasonable degree of scientific certainty? 7 A. I believe so, yes. 8 Q. In reaching those opinions, have 9 you used the methodology that's generally 10 accepted in your field as a chemist? 11 A. Yes. 12 Q. And have you used the same rigor 13 and attention to detail in this exercise in 14 your work in this case as you use in your 15 practice in consulting and formulating drugs 16 and other compounds? 17 A. Yes. 18 Q. You were asked questions by 19 Imerys' counsel regarding the flotation 20 process and the chemicals involved in the 21 flotation process. Would it be fair to say 22 that your work is ongoing in relation to that 23 question? 24 A. Yes.</p>	<p>1 anything further at the moment, 2 Dr. Crowley. 3 - - - 4 FURTHER EXAMINATION 5 - - - 6 BY MR. ZELLERS: 7 Q. Dr. Crowley, are you aware of 8 any study that establishes styrene exposure 9 as a cause or a contributing cause to ovarian 10 cancer in humans? 11 MS. O'DELL: Objection; asked 12 and answered. 13 A. Yeah, so as we've talked about, 14 those studies are unethical, and that's why 15 there aren't any. 16 MR. ZELLERS: I have no further 17 questions. I do just want to put a 18 notation on the record that at the 19 start of the deposition we received 20 this update. It's Exhibit -- we've 21 marked it as Exhibit 3. I have not had 22 a chance to look at it. It's possible 23 that I may have some questions relating 24 to Exhibit 3, once I do have a chance</p>
Page 363	Page 365
<p>1 MR. FERGUSON: Object to form. 2 THE REPORTER: Who was the 3 objection? 4 MR. FERGUSON: Sorry. 5 THE REPORTER: Thank you. 6 BY MS. O'DELL: 7 Q. You were -- you cite in your 8 report the CIR analyses of certain chemicals, 9 to the degree they were available. Why did 10 you include CIR as a part of the data you 11 reported? 12 MR. ZELLERS: Objection; form. 13 A. They're an industry trade group 14 that examines the safety of cosmetic 15 ingredients, and Johnson &amp; Johnson is a 16 member. 17 BY MS. O'DELL: 18 Q. Do you -- excuse me. Sorry. 19 A. And they're expected to follow 20 CIR rules. 21 Q. Do you consider the CIR 22 authoritative? 23 A. No. 24 MS. O'DELL: I don't have</p>	<p>1 to look at it and study. I just want 2 to put that notation on the record. 3 I'm not asking for an agreement. 4 MS. O'DELL: Well, no agreement. 5 This is your opportunity. I think, 6 Counsel, you have time available to you 7 if you want to take a break and look at 8 it. It's a six-page document. It's 9 very straightforward, and you're 10 welcome to ask Dr. Crowley questions, 11 but he's -- he's here today to answer 12 them. 13 MR. ZELLERS: It's a nine-page 14 document. It's very technical in 15 nature. I am not capable to sit here 16 on the fly and to go through and review 17 and analyze this document and this 18 material. 19 It may be that I have no further 20 questions relating to this document, 21 but the Doctor indicated that he had 22 completed this document on December 23 18th. It was not produced to the 24 defendants until today, right when we</p>

92 (Pages 362 to 365)

Michael Crowley, Ph.D.

Page 366	Page 368
<p>1 walked into the deposition.</p> <p>2 So I'm just making a note that I</p> <p>3 do want to go look at it, and at least</p> <p>4 reserving the opportunity to raise it</p> <p>5 with the Court if we feel we need time</p> <p>6 to ask questions about it.</p> <p>7 The other thing that I will ask</p> <p>8 is that -- I'll request that you update</p> <p>9 Deposition Exhibit 2, which are the</p> <p>10 invoices, with whatever invoices have</p> <p>11 been submitted by Dr. Crowley that have</p> <p>12 not been produced here today.</p> <p>13 MS. O'DELL: Let me just respond</p> <p>14 to that, because I've checked our</p> <p>15 files. We don't have another invoice.</p> <p>16 To the degree that there's an invoice</p> <p>17 in the future, which I'm sure there</p> <p>18 will be, obviously we'll give that to</p> <p>19 you, but it's not deficient as we stand</p> <p>20 here today. Just to point that out.</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p>	<p>1 Johnson's counsel? And it's the --</p> <p>2 A. I don't know if I still have it.</p> <p>3 Hang on.</p> <p>4 Q. I'll be happy to provide you my</p> <p>5 copy.</p> <p>6 A. Okay.</p> <p>7 Q. Would you explain what Exhibit 3</p> <p>8 is?</p> <p>9 A. Exhibit 3 is a comparison of the</p> <p>10 chemical abstract numbers that I found based</p> <p>11 upon the information that was provided to me</p> <p>12 at the outset of my work on this matter with</p> <p>13 those disclosed in the Exhibits 33 and 34 by</p> <p>14 J&amp;J. Out of 175 chemicals, I think we had</p> <p>15 different CAS numbers for 11, and it turns</p> <p>16 out that some of the CAS numbers provided by</p> <p>17 J&amp;J are effectively the same as mine, just</p> <p>18 multiple numbers for the same chemical.</p> <p>19 For example, the first item was</p> <p>20 Boswellia carterii oil. We have two</p> <p>21 different CAS numbers. When I searched what</p> <p>22 the J&amp;J CAS number was, I found that it -- it</p> <p>23 says that that number refers to Boswell --</p> <p>24 Boswellia carterii resin. The CAS number I</p>
Page 367	Page 369
<p>1 ---</p> <p>2 FURTHER EXAMINATION</p> <p>3 ---</p> <p>4 BY MR. FERGUSON:</p> <p>5 Q. I have what I hope is just one</p> <p>6 question, which is: With regard to the</p> <p>7 question you just answered that Ms. O'Dell</p> <p>8 asked you regarding the flotation process and</p> <p>9 your answer that your work is ongoing, I just</p> <p>10 want to make clear, in your 200-page or so</p> <p>11 report, there's not one word about anything</p> <p>12 relating to the flotation process that you</p> <p>13 evaluated. Correct?</p> <p>14 A. That's correct.</p> <p>15 MR. FERGUSON: That's all.</p> <p>16 MS. O'DELL: I have one last</p> <p>17 question.</p> <p>18 ---</p> <p>19 FURTHER EXAMINATION</p> <p>20 ---</p> <p>21 BY MS. O'DELL:</p> <p>22 Q. Dr. Crowley, can you turn to</p> <p>23 Exhibit 3, because I want to try to address</p> <p>24 the issue that's been raised by Johnson &amp;</p>	<p>1 found was for Boswellia carterii oil,</p> <p>2 according to PubChem and the FDA website.</p> <p>3 I also checked fragrance</p> <p>4 companies and verified that. So in this</p> <p>5 case, it didn't represent any changes in my</p> <p>6 report.</p> <p>7 Some of the CAS numbers that</p> <p>8 were provided by J&amp;J are clearly wrong.</p> <p>9 They're -- I think there are some errors</p> <p>10 there. For example, for Cedrus Atlantic</p> <p>11 cedarwood bark oil -- I'm sorry. That's not</p> <p>12 the one I was thinking of.</p> <p>13 Well, copper chlorophyll. The</p> <p>14 J&amp;J CAS number does not correspond to copper</p> <p>15 chlorophyll under any of the search engines</p> <p>16 that I looked at.</p> <p>17 The J&amp;J CAS number provided for</p> <p>18 gamma-Undecalactone does not correspond to</p> <p>19 that chemical. It's peppermint oil, so I</p> <p>20 think that that's a typo or mistake either in</p> <p>21 the name or the CAS number.</p> <p>22 Q. And so --</p> <p>23 A. That's what the document is.</p> <p>24 It's a comparison of the CAS numbers in</p>

93 (Pages 366 to 369)

Michael Crowley, Ph.D.

Page 370	Page 372
<p>1 Exhibits 33 and 34 to those that are in my</p> <p>2 report.</p> <p>3 Q. Earlier in the deposition, J&amp;J's</p> <p>4 counsel suggested that -- that you</p> <p>5 plagiarized some of the general definitions</p> <p>6 that were contained in your report. Do you</p> <p>7 recall that line of questioning?</p> <p>8 A. Yes.</p> <p>9 Q. Any of that information that</p> <p>10 J&amp;J's counsel showed you today, did that</p> <p>11 change your opinions?</p> <p>12 A. No.</p> <p>13 Q. Have any impact on your</p> <p>14 opinions?</p> <p>15 A. No.</p> <p>16 Q. Were they anything more than</p> <p>17 general definitions?</p> <p>18 MR. ZELLERS: Objection; form,</p> <p>19 foundation.</p> <p>20 A. Just foundational information,</p> <p>21 you know, background information. I thought</p> <p>22 I got the definition of an irritant or a</p> <p>23 sensitizer from a medical dictionary. The</p> <p>24 fact that it's evidently word for word from</p>	<p>1</p> <p>2 CERTIFICATE</p> <p>3</p> <p>4</p> <p>5 I HEREBY CERTIFY that the</p> <p>6 witness was duly sworn by me and that the</p> <p>7 deposition is a true record of the testimony</p> <p>8 given by the witness.</p> <p>9</p> <p>10 It was requested before</p> <p>11 completion of the deposition that the</p> <p>12 witness, MICHAEL CROWLEY, Ph.D., have the</p> <p>13 opportunity to read and sign the deposition</p> <p>14 transcript.</p> <p>15</p> <p>16</p> <p>17 STEVEN STOGEL</p> <p>18 Certified LiveNote Reporter</p> <p>19 Certified Shorthand Reporter</p> <p>20 CSR No. 6174-Expires 12/31/20</p> <p>21 Dated: January 7, 2019</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>26</p> <p>27</p> <p>28</p> <p>29</p> <p>30</p> <p>31</p> <p>32</p> <p>33</p> <p>34</p> <p>35</p> <p>36</p> <p>37</p> <p>38</p> <p>39</p> <p>40</p> <p>41</p> <p>42</p> <p>43</p> <p>44</p> <p>45</p> <p>46</p> <p>47</p> <p>48</p> <p>49</p> <p>50</p> <p>51</p> <p>52</p> <p>53</p> <p>54</p> <p>55</p> <p>56</p> <p>57</p> <p>58</p> <p>59</p> <p>60</p> <p>61</p> <p>62</p> <p>63</p> <p>64</p> <p>65</p> <p>66</p> <p>67</p> <p>68</p> <p>69</p> <p>70</p> <p>71</p> <p>72</p> <p>73</p> <p>74</p> <p>75</p> <p>76</p> <p>77</p> <p>78</p> <p>79</p> <p>80</p> <p>81</p> <p>82</p> <p>83</p> <p>84</p> <p>85</p> <p>86</p> <p>87</p> <p>88</p> <p>89</p> <p>90</p> <p>91</p> <p>92</p> <p>93</p> <p>94</p> <p>95</p> <p>96</p> <p>97</p> <p>98</p> <p>99</p> <p>100</p> <p>101</p> <p>102</p> <p>103</p> <p>104</p> <p>105</p> <p>106</p> <p>107</p> <p>108</p> <p>109</p> <p>110</p> <p>111</p> <p>112</p> <p>113</p> <p>114</p> <p>115</p> <p>116</p> <p>117</p> <p>118</p> <p>119</p> <p>120</p> <p>121</p> <p>122</p> <p>123</p> <p>124</p> <p>125</p> <p>126</p> <p>127</p> <p>128</p> <p>129</p> <p>130</p> <p>131</p> <p>132</p> <p>133</p> <p>134</p> <p>135</p> <p>136</p> <p>137</p> <p>138</p> <p>139</p> <p>140</p> <p>141</p> <p>142</p> <p>143</p> <p>144</p> <p>145</p> <p>146</p> <p>147</p> <p>148</p> <p>149</p> <p>150</p> <p>151</p> <p>152</p> <p>153</p> <p>154</p> <p>155</p> <p>156</p> <p>157</p> <p>158</p> <p>159</p> <p>160</p> <p>161</p> <p>162</p> <p>163</p> <p>164</p> <p>165</p> <p>166</p> <p>167</p> <p>168</p> <p>169</p> <p>170</p> <p>171</p> <p>172</p> <p>173</p> <p>174</p> <p>175</p> <p>176</p> <p>177</p> <p>178</p> <p>179</p> <p>180</p> <p>181</p> <p>182</p> <p>183</p> <p>184</p> <p>185</p> <p>186</p> <p>187</p> <p>188</p> <p>189</p> <p>190</p> <p>191</p> <p>192</p> <p>193</p> <p>194</p> <p>195</p> <p>196</p> <p>197</p> <p>198</p> <p>199</p> <p>200</p> <p>201</p> <p>202</p> <p>203</p> <p>204</p> <p>205</p> <p>206</p> <p>207</p> <p>208</p> <p>209</p> <p>210</p> <p>211</p> <p>212</p> <p>213</p> <p>214</p> <p>215</p> <p>216</p> <p>217</p> <p>218</p> <p>219</p> <p>220</p> <p>221</p> <p>222</p> <p>223</p> <p>224</p> <p>225</p> <p>226</p> <p>227</p> <p>228</p> <p>229</p> <p>230</p> <p>231</p> <p>232</p> <p>233</p> <p>234</p> <p>235</p> <p>236</p> <p>237</p> <p>238</p> <p>239</p> <p>240</p> <p>241</p> <p>242</p> <p>243</p> <p>244</p> <p>245</p> <p>246</p> <p>247</p> <p>248</p> <p>249</p> <p>250</p> <p>251</p> <p>252</p> <p>253</p> <p>254</p> <p>255</p> <p>256</p> <p>257</p> <p>258</p> <p>259</p> <p>260</p> <p>261</p> <p>262</p> <p>263</p> <p>264</p> <p>265</p> <p>266</p> <p>267</p> <p>268</p> <p>269</p> <p>270</p> <p>271</p> <p>272</p> <p>273</p> <p>274</p> <p>275</p> <p>276</p> <p>277</p> <p>278</p> <p>279</p> <p>280</p> <p>281</p> <p>282</p> <p>283</p> <p>284</p> <p>285</p> <p>286</p> <p>287</p> <p>288</p> <p>289</p> <p>290</p> <p>291</p> <p>292</p> <p>293</p> <p>294</p> <p>295</p> <p>296</p> <p>297</p> <p>298</p> <p>299</p> <p>300</p> <p>301</p> <p>302</p> <p>303</p> <p>304</p> <p>305</p> <p>306</p> <p>307</p> <p>308</p> <p>309</p> <p>310</p> <p>311</p> <p>312</p> <p>313</p> <p>314</p> <p>315</p> <p>316</p> <p>317</p> <p>318</p> <p>319</p> <p>320</p> <p>321</p> <p>322</p> <p>323</p> <p>324</p> <p>325</p> <p>326</p> <p>327</p> <p>328</p> <p>329</p> <p>330</p> <p>331</p> <p>332</p> <p>333</p> <p>334</p> <p>335</p> <p>336</p> <p>337</p> <p>338</p> <p>339</p> <p>340</p> <p>341</p> <p>342</p> <p>343</p> <p>344</p> <p>345</p> <p>346</p> <p>347</p> <p>348</p> <p>349</p> <p>350</p> <p>351</p> <p>352</p> <p>353</p> <p>354</p> <p>355</p> <p>356</p> <p>357</p> <p>358</p> <p>359</p> <p>360</p> <p>361</p> <p>362</p> <p>363</p> <p>364</p> <p>365</p> <p>366</p> <p>367</p> <p>368</p> <p>369</p> <p>370</p> <p>371</p> <p>372</p> <p>373</p> <p>374</p> <p>375</p> <p>376</p> <p>377</p> <p>378</p> <p>379</p> <p>380</p> <p>381</p> <p>382</p> <p>383</p> <p>384</p> <p>385</p> <p>386</p> <p>387</p> <p>388</p> <p>389</p> <p>390</p> <p>391</p> <p>392</p> <p>393</p> <p>394</p> <p>395</p> <p>396</p> <p>397</p> <p>398</p> <p>399</p> <p>400</p> <p>401</p> <p>402</p> <p>403</p> <p>404</p> <p>405</p> <p>406</p> <p>407</p> <p>408</p> <p>409</p> <p>410</p> <p>411</p> <p>412</p> <p>413</p> <p>414</p> <p>415</p> <p>416</p> <p>417</p> <p>418</p> <p>419</p> <p>420</p> <p>421</p> <p>422</p> <p>423</p> <p>424</p> <p>425</p> <p>426</p> <p>427</p> <p>428</p> <p>429</p> <p>430</p> <p>431</p> <p>432</p> <p>433</p> <p>434</p> <p>435</p> <p>436</p> <p>437</p> <p>438</p> <p>439</p> <p>440</p> <p>441</p> <p>442</p> <p>443</p> <p>444</p> <p>445</p> <p>446</p> <p>447</p> <p>448</p> <p>449</p> <p>450</p> <p>451</p> <p>452</p> <p>453</p> <p>454</p> <p>455</p> <p>456</p> <p>457</p> <p>458</p> <p>459</p> <p>460</p> <p>461</p> <p>462</p> <p>463</p> <p>464</p> <p>465</p> <p>466</p> <p>467</p> <p>468</p> <p>469</p> <p>470</p> <p>471</p> <p>472</p> <p>473</p> <p>474</p> <p>475</p> <p>476</p> <p>477</p> <p>478</p> <p>479</p> <p>480</p> <p>481</p> <p>482</p> <p>483</p> <p>484</p> <p>485</p> <p>486</p> <p>487</p> <p>488</p> <p>489</p> <p>490</p> <p>491</p> <p>492</p> <p>493</p> <p>494</p> <p>495</p> <p>496</p> <p>497</p> <p>498</p> <p>499</p> <p>500</p> <p>501</p> <p>502</p> <p>503</p> <p>504</p> <p>505</p> <p>506</p> <p>507</p> <p>508</p> <p>509</p> <p>510</p> <p>511</p> <p>512</p> <p>513</p> <p>514</p> <p>515</p> <p>516</p> <p>517</p> <p>518</p> <p>519</p> <p>520</p> <p>521</p> <p>522</p> <p>523</p> <p>524</p> <p>525</p> <p>526</p> <p>527</p> <p>528</p> <p>529</p> <p>530</p> <p>531</p> <p>532</p> <p>533</p> <p>534</p> <p>535</p> <p>536</p> <p>537</p> <p>538</p> <p>539</p> <p>540</p> <p>541</p> <p>542</p> <p>543</p> <p>544</p> <p>545</p> <p>546</p> <p>547</p> <p>548</p> <p>549</p> <p>550</p> <p>551</p> <p>552</p> <p>553</p> <p>554</p> <p>555</p> <p>556</p> <p>557</p> <p>558</p> <p>559</p> <p>560</p> <p>561</p> <p>562</p> <p>563</p> <p>564</p> <p>565</p> <p>566</p> <p>567</p> <p>568</p> <p>569</p> <p>570</p> <p>571</p> <p>572</p> <p>573</p> <p>574</p> <p>575</p> <p>576</p> <p>577</p> <p>578</p> <p>579</p> <p>580</p> <p>581</p> <p>582</p> <p>583</p> <p>584</p> <p>585</p> <p>586</p> <p>587</p> <p>588</p> <p>589</p> <p>590</p> <p>591</p> <p>592</p> <p>593</p> <p>594</p> <p>595</p> <p>596</p> <p>597</p> <p>598</p> <p>599</p> <p>600</p> <p>601</p> <p>602</p> <p>603</p> <p>604</p> <p>605</p> <p>606</p> <p>607</p> <p>608</p> <p>609</p> <p>610</p> <p>611</p> <p>612</p> <p>613</p> <p>614</p> <p>615</p> <p>616</p> <p>617</p> <p>618</p> <p>619</p> <p>620</p> <p>621</p> <p>622</p> <p>623</p> <p>624</p> <p>625</p> <p>626</p> <p>627</p> <p>628</p> <p>629</p> <p>630</p> <p>631</p> <p>632</p> <p>633</p> <p>634</p> <p>635</p> <p>636</p> <p>637</p> <p>638</p> <p>639</p> <p>640</p> <p>641</p> <p>642</p> <p>643</p> <p>644</p> <p>645</p> <p>646</p> <p>647</p> <p>648</p> <p>649</p> <p>650</p> <p>651</p> <p>652</p> <p>653</p> <p>654</p> <p>655</p> <p>656</p> <p>657</p> <p>658</p> <p>659</p> <p>660</p> <p>661</p> <p>662</p> <p>663</p> <p>664</p> <p>665</p> <p>666</p> <p>667</p> <p>668</p> <p>669</p> <p>670</p> <p>671</p> <p>672</p> <p>673</p> <p>674</p> <p>675</p> <p>676</p> <p>677</p> <p>678</p> <p>679</p> <p>680</p> <p>681</p> <p>682</p> <p>683</p> <p>684</p> <p>685</p> <p>686</p> <p>687</p> <p>688</p> <p>689</p> <p>690</p> <p>691</p> <p>692</p> <p>693</p> <p>694</p> <p>695</p> <p>696</p> <p>697</p> <p>698</p> <p>699</p> <p>700</p> <p>701</p> <p>702</p> <p>703</p> <p>704</p> <p>705</p> <p>706</p> <p>707</p> <p>708</p> <p>709</p> <p>710</p> <p>711</p> <p>712</p> <p>713</p> <p>714</p> <p>715</p> <p>716</p> <p>717</p> <p>718</p> <p>719</p> <p>720</p> <p>721</p> <p>722</p> <p>723</p> <p>724</p> <p>725</p> <p>726</p> <p>727</p> <p>728</p> <p>729</p> <p>730</p> <p>731</p> <p>732</p> <p>733</p> <p>734</p> <p>735</p> <p>736</p> <p>737</p> <p>738</p> <p>739</p> <p>740</p> <p>741</p> <p>742</p> <p>743</p> <p>744</p> <p>745</p> <p>746</p> <p>747</p> <p>748</p> <p>749</p> <p>750</p> <p>751</p> <p>752</p> <p>753</p> <p>754</p> <p>755</p> <p>756</p> <p>757</p> <p>758</p> <p>759</p> <p>760</p> <p>761</p> <p>762</p> <p>763</p> <p>764</p> <p>765</p> <p>766</p> <p>767</p> <p>768</p> <p>769</p> <p>770</p> <p>771</p> <p>772</p> <p>773</p> <p>774</p> <p>775</p> <p>776</p> <p>777</p> <p>778</p> <p>779</p> <p>780</p> <p>781</p> <p>782</p> <p>783</p> <p>784</p> <p>785</p> <p>786</p> <p>787</p> <p>788</p> <p>789</p> <p>790</p> <p>791</p> <p>792</p> <p>793</p> <p>794</p> <p>795</p> <p>796</p> <p>797</p> <p>798</p> <p>799</p> <p>800</p> <p>801</p> <p>802</p> <p>803</p> <p>804</p> <p>805</p> <p>806</p> <p>807</p> <p>808</p> <p>809</p> <p>810</p> <p>811</p> <p>812</p> <p>813</p> <p>814</p> <p>815</p> <p>816</p> <p>817</p> <p>818</p> <p>819</p> <p>820</p> <p>821</p> <p>822</p> <p>823</p> <p>824</p> <p>825</p> <p>826</p> <p>827</p> <p>828</p> <p>829</p> <p>830</p> <p>831</p> <p>832</p> <p>833</p> <p>834</p> <p>835</p> <p>836</p> <p>837</p> <p>838</p> <p>839</p> <p>840</p> <p>841</p> <p>842</p> <p>843</p> <p>844</p> <p>845</p> <p>846</p> <p>847</p> <p>848</p> <p>849</p> <p>850</p> <p>851</p> <p>852</p> <p>853</p> <p>854</p> <p>855</p> <p>856</p> <p>857</p> <p>858</p> <p>859</p> <p>860</p> <p>861</p> <p>862</p> <p>863</p> <p>864</p> <p>865</p> <p>866</p> <p>867</p> <p>868</p> <p>869</p> <p>870</p> <p>871</p> <p>872</p> <p>873</p> <p>874</p> <p>875</p> <p>876</p> <p>877</p> <p>878</p> <p>879</p> <p>880</p> <p>881</p> <p>882</p> <p>883</p> <p>884</p> <p>885</p> <p>886</p> <p>887</p> <p>888</p> <p>889</p> <p>890</p> <p>891</p> <p>892</p> <p>893</p> <p>894</p> <p>895</p> <p>896</p> <p>897</p> <p>898</p> <p>899</p> <p>900</p> <p>901</p> <p>902</p> <p>903</p> <p>904</p> <p>905</p> <p>906</p> <p>907</p> <p>908</p> <p>909</p> <p>910</p> <p>911</p> <p>912</p> <p>913</p> <p>914</p> <p>915</p> <p>916</p> <p>917</p> <p>918</p> <p>919</p> <p>920</p> <p>921</p> <p>922</p> <p>923</p> <p>924</p> <p>925</p> <p>926</p> <p>927</p> <p>928</p> <p>929</p> <p>930</p> <p>931</p> <p>932</p> <p>933</p> <p>934</p> <p>935</p> <p>936</p> <p>937</p> <p>938</p> <p>939</p> <p>940</p> <p>941</p> <p>942</p> <p>943</p> <p>944</p> <p>945</p> <p>946</p> <p>947</p> <p>948</p> <p>949</p> <p>950</p> <p>951</p> <p>952</p> <p>953</p> <p>954</p> <p>955</p> <p>956</p> <p>957</p> <p>958</p> <p>959</p> <p>960</p> <p>961</p> <p>962</p> <p>963</p> <p>964</p> <p>965</p> <p>966</p> <p>967</p> <p>968</p> <p>969</p> <p>970</p> <p>971</p> <p>972</p> <p>973</p> <p>974</p> <p>975</p> <p>976</p> <p>977</p> <p>978</p> <p>979</p> <p>980</p> <p>981</p> <p>982</p> <p>983</p> <p>984</p> <p>985</p> <p>986</p> <p>987</p> <p>988</p> <p>989</p> <p>990</p> <p>991</p> <p>992</p> <p>993</p> <p>994</p> <p>995</p> <p>996</p> <p>997</p> <p>998</p> <p>999</p> <p>1000</p>
Page 371	Page 373
<p>1 Wikipedia is really immaterial to how I</p> <p>2 formed my opinion.</p> <p>3 MS. O'DELL: No further</p> <p>4 questions.</p> <p>5 MR. ZELLERS: No further</p> <p>6 questions. Thank you.</p> <p>7 MR. FERGUSON: Nothing further.</p> <p>8 MS. O'DELL: Thank you.</p> <p>9 THE VIDEOGRAPHER: This</p> <p>10 concludes the deposition of Dr. Michael</p> <p>11 Crowley. Going off the record, the</p> <p>12 time is 5:59 p.m.</p> <p>13 (Deposition concluded at</p> <p>14 5:59 p.m.)</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p>	<p>1 INSTRUCTIONS TO WITNESS</p> <p>2</p> <p>3 Please read your deposition</p> <p>4 over carefully and make any necessary</p> <p>5 corrections. You should state the reason in</p> <p>6 the appropriate space on the errata sheet for</p> <p>7 any corrections that are made.</p> <p>8 After doing so, please sign</p> <p>9 the errata sheet and date it.</p> <p>10 You are signing same subject</p> <p>11 to the changes you have noted on the errata</p> <p>12 sheet, which will be attached to your</p> <p>13 deposition.</p> <p>14 It is imperative that you</p> <p>15 return the original errata sheet to the</p> <p>16 deposing attorney within thirty (30) days of</p> <p>17 receipt of the deposition transcript by you.</p> <p>18 If you fail to do so, the deposition</p> <p>19 transcript may be deemed to be accurate and</p> <p>20 may be used in court.</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p>

Michael Crowley, Ph.D.

Page 374	Page 376
<div style="text-align: center;"> <p>-----</p> <p>E R R A T A</p> <p>-----</p> </div> <p>PAGE LINE CHANGE</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p> <p>REASON: _____</p>	<div style="text-align: center;"> <p>LAWYER'S NOTES</p> <p>PAGE LINE</p> </div> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<div style="text-align: center;"> <p>Page 375</p> </div> <p>ACKNOWLEDGMENT OF DEPONENT</p> <p>I, _____, do</p> <p>hereby certify that I have read the foregoing</p> <p>pages, 1 - 376, and that the same is a</p> <p>correct transcription of the answers given by</p> <p>me to the questions therein propounded,</p> <p>except for the corrections or changes in form</p> <p>or substance, if any, noted in the attached</p> <p>Errata Sheet.</p> <p>_____</p> <p>MICHAEL CROWLEY, Ph.D.                      DATE</p> <p>Subscribed and sworn</p> <p>to before me this</p> <p>_____ day of _____, 20__.</p> <p>My commission expires: _____</p> <p>_____</p> <p>Notary Public</p>	



<b>A</b>	<b>accepted</b> 84:24 362:10	<b>adding</b> 165:9 355:10	269:10 271:2 273:2 315:12	49:17
<b>abandoned</b> 174:13	<b>access</b> 15:14,15 24:24 299:14	<b>addition</b> 78:1,2 301:13 344:22	355:2,6 357:3 357:5	<b>agreement</b> 206:14 296:2 365:3,4
<b>abbvie</b> 48:7	299:17 304:12 305:13 343:21	355:7	<b>adrenal</b> 280:11	<b>ahead</b> 24:5 40:3 126:9 205:18
<b>aberrations</b> 118:5,12,24 288:7	360:8,17	<b>additional</b> 14:8 16:13 24:14	<b>adult</b> 357:15	316:13 321:5 340:21 353:22
<b>ability</b> 81:14 235:13 358:23	<b>accord</b> 357:2	37:15 38:15,21 40:7 51:12	<b>advance</b> 25:4	<b>air</b> 129:15
<b>able</b> 16:21 73:4 144:5 200:24	<b>accountable</b> 87:19 88:1	57:17 84:4 156:20	<b>advisory</b> 60:13 60:16	<b>akela</b> 47:19
201:20 209:24 252:4 267:17	<b>accounted</b> 44:19	<b>additive</b> 174:6,7 174:10 356:2	<b>affairs</b> 58:13	<b>aklevorn</b> 2:10
331:1 353:16 354:24 360:5	<b>accuracy</b> 211:9	<b>additives</b> 6:11 173:22 212:2	<b>affect</b> 82:1	<b>al</b> 115:19 116:6 176:23
<b>abnormal</b> 234:2	<b>accurate</b> 31:1 43:21 250:4 373:19	<b>address</b> 39:5 40:17 83:20	<b>agency</b> 197:11 236:5 281:4 340:11	<b>alabama</b> 2:4
<b>abovestyled</b> 1:15	<b>accurately</b> 50:21	310:13 336:14 347:20 367:23	<b>agent</b> 240:8 242:5 243:9,21 259:3 260:10	<b>alan</b> 338:9
<b>abramovici</b> 117:16	<b>acid</b> 119:6	<b>addressed</b> 13:16 adenoma 277:9 277:14	263:5 266:22 269:5 274:22 275:12 276:18	<b>alcohol</b> 117:10 140:14
<b>absence</b> 153:22 186:19 188:2 188:13,17 274:5 275:7 292:22	<b>acknowledge</b> 249:2	<b>adenomas</b> 184:7 256:5,23 262:5 265:7,9,10	<b>agents</b> 239:7 240:14 241:3 242:1	<b>alcon</b> 46:13
<b>absent</b> 332:18 355:1	<b>acknowledging</b> 249:6	<b>adequate</b> 96:8 259:20	<b>ago</b> 46:19 64:5 301:9 338:18	<b>aldehyde</b> 226:19
<b>absolutely</b> 93:1 170:5 328:12	<b>acknowledgm...</b> 375:2	<b>adequately</b> 194:12	<b>agree</b> 32:19 33:4 83:20 84:10 85:8 87:20	<b>aliquots</b> 137:18
<b>absorb</b> 130:5 284:22	<b>acquainted</b> 338:3	<b>adhere</b> 356:6	88:23 89:23 104:13 120:24 121:15 122:18	<b>allegation</b> 45:4
<b>absorbed</b> 81:19 81:23 130:12 130:14,17,24 257:11	<b>acronym</b> 120:6 359:24	<b>adheres</b> 220:4	128:20 129:11 130:3 131:2,10 155:24 157:12	<b>allen</b> 2:2 13:17
<b>absorption</b> 129:16 229:10 232:7 268:10	<b>act</b> 97:1,9 99:19 99:20,21	<b>adjuvant</b> 174:12	159:20 165:19 166:24 175:17 175:24 186:19	<b>allergen</b> 322:17
<b>abstract</b> 19:9 368:10	<b>action</b> 281:14,23	<b>admin</b> 274:16	188:19 190:12 190:16 212:14 212:22 213:9	<b>allergens</b> 110:12 300:18 321:20 321:22 322:4 322:12 327:24
<b>academy</b> 120:3 121:10	<b>activation</b> 119:2	<b>administer</b> 283:19	214:5,8,23 215:9 245:5 253:16 259:17	<b>allergic</b> 215:4,6 304:3 306:21 321:23 322:4 325:12,23 326:7
<b>acceptable</b> 165:16 311:11 311:21 312:12 316:16	<b>active</b> 187:3 257:18	<b>administered</b> 205:4 269:13 328:2 361:11	294:10 313:16 334:11	<b>allow</b> 174:10 283:19
	<b>activity</b> 130:20 184:4 257:16 328:7 334:23 361:13	<b>administration</b> 130:1,19 140:10,12,15 140:20,20,24 151:20 152:24 180:2,13,15 182:9,12,15,18 185:11 214:10 215:20 231:10	<b>agreeable</b> 52:20 <b>agreed</b> 37:16	<b>almond</b> 226:20 228:8,19 229:1 229:4,7,19
	<b>actual</b> 248:19			<b>almondscented</b> 228:12
	<b>acute</b> 215:1,11 215:21,23 309:22			<b>alsaleh</b> 176:23
	<b>add</b> 11:11 36:9 52:19 75:13 145:21 220:1			<b>alter</b> 19:23
	<b>added</b> 237:21 335:18			<b>aluminum</b> 54:6 <b>alveolar</b> 265:8

<b>amanda</b> 2:8	<b>animal</b> 114:18	108:2 111:14	337:11 364:12	315:2 320:12
<b>amending</b> 174:9	115:6,9 128:10	113:18,24	367:7	322:13 324:4
<b>amendment</b> 6:5	128:12,13	115:5 126:7	<b>answering</b>	326:18 344:12
170:10	183:7 184:16	128:16 132:9	146:14 152:11	344:16,20,23
<b>america</b> 3:10	185:1 196:5,18	140:1 142:3,21	227:21	<b>appendix</b> 31:5,7
<b>amount</b> 16:16	213:1 217:24	144:6 146:13	<b>answers</b> 75:14	31:14 110:8,8
17:7 73:21,21	218:1,5 222:2	152:1,3,4,8,12	191:9 263:14	150:21 303:22
107:10 110:17	235:6 256:2,13	152:17 159:17	263:17 267:6	305:12
125:18 130:5	257:20,22	176:9 184:22	268:2 375:7	<b>apples</b> 146:15
130:23 136:10	258:20 261:16	187:16 196:2	<b>anticipate</b> 264:7	<b>application</b>
136:12,15	262:2,9,10,19	196:13,17	<b>anticipated</b>	59:22,24 200:6
168:17,22	265:3,13 266:1	197:8 201:16	197:23 359:16	201:9 219:21
209:13,21	266:4 269:13	202:6 204:10	<b>antonio</b> 66:5	272:21,24
252:21 253:8	271:20 273:11	204:12 223:11	<b>anus</b> 231:17	308:6
286:11 312:13	273:13 274:13	224:11,22	<b>anybody</b> 59:14	<b>applications</b>
312:18 329:6	277:5,17	227:18 228:3,5	341:4	201:14 313:12
350:11 354:9	278:21 279:4,7	231:6 232:19	<b>anytime</b> 71:23	357:9
354:13 355:3	282:2 291:23	235:12 236:1	<b>apart</b> 354:6	<b>applied</b> 61:22
<b>analyses</b> 97:5	293:18 294:2	251:10,17	<b>apparently</b>	63:4 130:6
198:8 253:20	295:16 296:3	252:5 253:12	339:6	147:22 207:18
254:11 292:4	316:7 328:7	254:21 255:1	<b>appear</b> 28:16	214:11 227:5
307:13 354:16	355:23 358:13	256:1 261:2	39:3 98:4	229:8 231:15
363:8	<b>animals</b> 212:12	264:12 267:13	172:23	313:13 356:21
<b>analysis</b> 71:9	234:10 238:24	273:15,21,24	<b>appearances</b> 2:1	<b>applies</b> 22:16
88:6 98:13	239:4,6 240:17	282:14,19	3:1	113:9 114:7
123:6 125:2	241:5,8 242:10	283:1 288:17	<b>appeared</b>	<b>apply</b> 128:12,17
133:1 134:18	242:14 243:4	293:15,16	160:17	372:17
143:24 153:21	244:21 245:3	317:5 318:16	<b>appearing</b> 14:13	<b>applying</b> 306:13
155:13 193:24	255:12 257:6	318:24 319:1,5	<b>appears</b> 13:10	306:14
201:1 214:21	260:2,5 262:18	319:12 320:21	14:18 18:17,22	<b>approach</b> 225:5
216:7,16 221:3	266:6 272:16	320:23 324:17	21:18 23:6	225:5
222:10,15	275:7 278:22	329:13,17,19	27:4 37:11	<b>appropriate</b>
223:2,15 224:3	280:13 284:1	336:17 346:21	99:2 104:16	56:16 89:21
229:13 232:1	287:18,20,22	347:8 365:11	161:2	92:14 103:14
253:14 269:1	296:10 355:5	367:9	<b>appel</b> 3:17 4:7	344:5,6 373:6
274:19 286:17	358:16	<b>answered</b> 59:6	339:7,9,14,16	<b>appropriation</b>
301:24 309:13	<b>anne</b> 5:13 96:4	94:22 108:2	339:23 340:7	89:19
309:20 330:13	<b>annex</b> 149:12	143:3,4 187:22	340:17	<b>approval</b> 60:9
350:22 361:18	<b>announcement</b>	187:23 198:15	<b>appendices</b> 28:4	<b>approve</b> 318:5
<b>analyze</b> 73:9	173:20	216:1 223:6,8	28:5,11,16	<b>approved</b> 65:17
365:17	<b>answer</b> 7:9 8:5	227:19 283:16	29:2 36:17	140:23 150:17
<b>analyzing</b> 73:8	10:19,24 17:15	298:10 302:24	78:5,8 90:22	151:16 169:13
<b>anatomies</b>	20:11 39:18,20	316:10 317:3,4	91:5 92:22	182:9
357:13	40:3 49:14	317:14,17	93:5,16 232:11	<b>approximately</b>
<b>anderson</b>	61:7,13 70:7	318:21 320:21	298:17 299:22	46:23 73:15
118:16	87:23 88:12	321:12 329:15	303:21 304:11	<b>april</b> 37:3 38:5,7
<b>angeles</b> 2:15	92:18 94:23	329:16,22	306:1 307:10	354:6,8

<b>area</b> 30:6 57:6 82:16 229:8 231:15 313:14 328:2 355:4	80:24 81:6 83:4,9,21 94:22 105:22 107:19 108:2,4	317:22 323:19 323:20 365:3 <b>assays</b> 6:14	217:13 251:2 <b>associated</b> 82:11 82:21,24 83:6 85:7 132:2,8	<b>attempting</b> 60:8 <b>attendance</b> 9:14 <b>attending</b> 9:11
<b>areas</b> 30:13 45:22	123:7,24 124:2 124:23 125:5 126:4,10 127:1	<b>assertation</b> 283:23 <b>assess</b> 132:13 133:21 224:1	133:18 142:7 179:17 187:11 200:7 206:14 213:4,8 216:23	<b>attention</b> 362:13 <b>attest</b> 211:8 <b>attorney</b> 373:16
<b>arent</b> 110:20 288:15 343:1 364:15	138:7 143:3 183:12 184:10 187:22 188:15	<b>assessment</b> 5:19 71:9 96:5 112:22 119:20	218:3 219:7 228:9,22 246:23 256:4 256:22 277:7	<b>attorneys</b> 63:8 336:20 347:14 348:5,12,13
<b>argue</b> 235:10 <b>argument</b> 165:4	190:21 194:13 194:14 196:2 196:13 199:11	120:12,22 121:2,11,16,18 121:18,24	278:10 288:3 300:21 309:1 316:21	<b>attribution</b> 90:15 91:7 93:10 94:19 103:11
<b>arps</b> 2:18 <b>arrangements</b> 22:22	200:22 201:13 219:23 223:6,7 224:8 229:23	122:3,15,24 123:6,8,12,17 124:4,22 131:6	<b>associates</b> 252:14 278:21 285:4	<b>audible</b> 17:10 <b>austin</b> 1:18,18 3:4
<b>arriving</b> 112:12 123:10	233:2 235:11 237:20 241:15 252:1,20	131:14 132:6 132:14,23 133:5,8,22	<b>associating</b> 249:21 283:13 296:3	<b>author</b> 116:5 117:20 <b>authored</b> 62:23 66:24
<b>art</b> 194:11 274:8 <b>article</b> 5:9,12,13 5:19 6:9,12	263:11,16 267:3,23 273:8 273:9,10 283:16 295:2	158:21,24 159:7,21 160:5 161:21 175:20	<b>association</b> 114:15 149:7 156:22 157:4,7	<b>authoritative</b> 363:22 <b>authorities</b> 110:4 301:16
96:3,9,21 97:5 98:15 99:9 176:20,24 177:17 178:20	298:10 302:15 303:6 310:14 317:3,14 320:19 321:12	176:3,8,12 190:19 191:21 200:14,19 204:20 221:4	157:8 158:10 262:2 265:4 271:21 279:14	<b>authority</b> 118:7 127:22 283:18 287:6,16
179:2,22 284:13	329:11,16 332:17 336:16 337:11 343:5	221:10 223:3 223:16,17,21 223:24 224:3	<b>assume</b> 11:1 81:6 219:23	288:11 301:17 340:15 <b>authors</b> 77:19
<b>articles</b> 67:17 74:10 76:6,13 90:5,9 91:14	349:18 354:12 355:9 356:19 357:23 359:22	225:8,11,13 253:3 268:1 292:1 293:5	<b>assuming</b> 207:19 223:10 227:4 228:7,21	91:6 103:9 126:21 178:20 <b>available</b> 65:4
92:6 93:9 94:17 103:8 116:9 155:20	361:4,14,17 362:18 364:11 367:8	308:5 310:6 322:2 324:8 361:15	267:21 <b>assumption</b> 82:1 <b>assumptions</b> 81:1 83:15	66:1 73:18 118:9 133:16 134:22 137:21
<b>artificial</b> 226:20 228:8,18 229:1 229:4,19	<b>asking</b> 88:9 113:13,17 129:14 133:10	<b>assessments</b> 132:24 182:14 204:16 299:3	<b>assurance</b> 58:13 <b>atlantic</b> 369:10 <b>atp</b> 291:5	205:3 232:6 247:20 261:22 264:21 277:3
<b>arts</b> 51:4 <b>asbestos</b> 33:10 50:16 67:2,20 108:17	133:12,13 138:12 141:7 141:14,17	<b>assignment</b> 63:17 <b>assist</b> 33:20 34:6	<b>attached</b> 1:19 220:15 344:12 356:16 373:12	278:19 287:12 289:1 291:23 303:4,7 307:3
<b>ascertain</b> 269:14 353:8 354:24 <b>asher</b> 34:3,4,5 34:13,18 35:8	153:15 160:8 224:12,13 235:8,18	<b>assistance</b> 35:11 64:22 <b>assisted</b> 33:23 35:23	375:10 <b>attempt</b> 123:5 138:24	315:11 320:2,7 326:2 343:19 343:20 360:12
<b>aside</b> 24:10 42:1 <b>asked</b> 31:8,15 33:11 38:17 39:1,7 40:8,17 59:14 73:9	267:21 279:12 297:1 305:14	<b>associate</b> 195:22	<b>attempted</b> 326:18	360:21 361:2 363:9 365:6

<b>avenue</b> 2:19 3:3 3:8 <b>average</b> 302:6 <b>aware</b> 25:10 36:2 89:13 90:3 95:24 100:4 102:3,18 106:15 114:9 120:24 185:4 195:21 196:21 198:18 199:15 199:16 211:7 211:10 217:12 228:17 249:20 252:13 270:11 279:5 282:5,15 283:12 284:9 285:10 298:2 314:15 316:2 316:23 317:10 317:24 318:14 318:20 364:7 <b>awful</b> 73:14 <b>awfully</b> 219:21	207:20 209:21 216:10 217:15 225:15,24 232:24 233:7 236:4 237:15 243:19 252:22 286:12,22 302:11 309:16 323:19 324:7 325:17 326:5 328:18 329:6 330:2,19 334:8 345:14 346:18 346:24 347:4 349:5 350:1 352:10,13 355:12,16 357:10 <b>bachelors</b> 341:20 <b>back</b> 16:9 27:13 34:15 68:7,23 105:3 168:11 169:22 173:5 192:6 217:11 218:17 234:13 245:22 289:14 294:21,24 295:4 319:11 321:1 329:18 333:10 345:8 <b>background</b> 50:22 122:10 122:14,16 291:1 370:21 <b>bacteria</b> 205:8 <b>bacterial</b> 205:14 <b>bad</b> 121:6 348:1 <b>balsam</b> 6:6,8 162:12,16 164:17,21 165:20 166:2 167:23 168:4,7 168:12,17 169:23 170:1 170:12,19 171:7,7,8,12	171:15 172:9 172:17 188:10 304:24 318:3 <b>banned</b> 160:15 169:15 191:17 <b>banning</b> 159:3 161:24 174:18 <b>bark</b> 369:11 <b>base</b> 353:19 <b>based</b> 85:3 125:16 126:11 136:2 147:21 169:10 184:5 205:24 253:19 254:10 278:18 291:10 292:21 293:9,17 302:3 336:17 343:23 368:10 <b>basic</b> 5:9 <b>basis</b> 14:24 63:16 84:2 91:1 184:14 215:17 216:2 301:6 309:10 320:1 321:8 <b>bathe</b> 189:3 <b>bay</b> 57:6 <b>bb</b> 353:3,4 <b>beach</b> 265:19 <b>bearing</b> 19:19 <b>beasley</b> 2:2 13:17 <b>beasleyallen</b> 2:5 2:6 <b>becoming</b> 101:19 <b>beginning</b> 11:17 71:23 95:18 103:1 105:3 192:6 294:21 341:15 <b>begins</b> 9:2 29:11 104:9 218:24 249:17 <b>behalf</b> 10:2 46:14,17 48:6	49:5 60:15 <b>behavior</b> 310:10 <b>believe</b> 10:8 13:15 15:7,13 20:5 22:14,15 24:18 30:4 31:2,4 33:19 37:3,5 41:18 47:15 60:19 68:12,17 69:3 75:5 77:11 78:16 84:8,14 91:18,19 93:13 93:14,14 94:4 95:1,23 98:8 100:9,13 101:11 102:5,9 113:6 114:4,14 116:12 126:14 126:17 142:13 147:3,9,12 148:6 155:19 162:2 169:20 174:15 177:19 178:18 181:12 193:15,18 199:22 200:5,9 210:7,19 218:10,19 219:6 221:22 240:20 244:15 248:4 254:14 258:2 259:5 262:6 263:3 267:8 276:16 278:10 281:11 284:14 285:15 289:4,19 293:7 297:6,23 298:16 308:17 318:16 329:21 338:10 339:2 360:6 361:5,20 362:7 <b>benzaldehyde</b> 115:14 226:6 226:13,15,16	228:7,17,22 230:23 232:3 232:24 <b>benzene</b> 169:1,6 173:5,11,21 197:12 226:19 <b>benzophenone</b> 7:5 198:19 236:20,23 275:12,22 276:14,24 277:6,18 278:3 278:13,22 279:13 <b>benzyl</b> 117:10 140:14 <b>bernardo</b> 349:17 <b>best</b> 36:14 61:8 76:11 84:9 169:18 235:12 256:1 316:6 324:21 325:3 <b>better</b> 141:20 150:9 166:1 264:13 310:12 334:16 <b>bias</b> 84:3 85:6 86:13 88:4,20 <b>biased</b> 84:12 85:6 <b>big</b> 153:18 <b>bill</b> 34:12,20,21 34:23 <b>billed</b> 37:19 <b>biller</b> 14:19 <b>billing</b> 14:21 35:9 <b>bioavailability</b> 130:10 <b>biological</b> 31:24 130:20 257:16 328:7 342:1 <b>biorelevant</b> 274:11 <b>bit</b> 74:7 174:2 193:8 198:12
---	---	--	--	---

341:16 357:14 <b>bladder</b> 280:12 <b>blanket</b> 229:11 <b>blend</b> 137:18 <b>blended</b> 137:16 306:15 <b>blending</b> 306:19 306:22 <b>blood</b> 219:19 309:2 <b>blow</b> 245:12 <b>board</b> 43:9,19 51:15 54:8 <b>bodies</b> 147:19 149:16,20 151:22 153:2 182:8,11 <b>bodily</b> 101:18 <b>body</b> 28:2,21 29:1 77:3 82:20 91:3,15 93:5,7 94:16 130:13,24 214:6 273:17 280:9 <b>book</b> 4:20 23:9 64:1,4 77:6 301:11 305:20 <b>books</b> 63:23,24 77:14 112:2 <b>bookshelf</b> 77:17 <b>borderline</b> 293:1 <b>borrowed</b> 146:1 146:3 <b>bosch</b> 282:1 <b>boswell</b> 368:23 <b>boswellia</b> 368:20,24 369:1 <b>bottle</b> 136:20 137:4 <b>bottom</b> 121:4,8 121:12 158:11 177:22 355:13 <b>bought</b> 205:21 <b>boutwell</b> 281:24	<b>brand</b> 55:5 <b>break</b> 12:3 15:18 16:10 71:24 72:3,7 104:21 185:13 189:13 191:23 245:11,14 294:13 365:7 <b>briefly</b> 39:7 339:10 <b>bring</b> 22:4 <b>bringing</b> 57:9 <b>broad</b> 229:12 <b>broader</b> 193:9 <b>broken</b> 214:6 <b>bronchiolar</b> 265:8 <b>brought</b> 18:15 23:13,15 <b>buffers</b> 331:20 <b>build</b> 153:9 186:24 <b>built</b> 110:9 <b>bullet</b> 87:15 <b>bunch</b> 116:14 327:22,23,24 330:20 354:22 <b>burn</b> 308:23 <b>burns</b> 2:8 <b>burnscharest</b> 2:10 <b>business</b> 12:22 <b>busy</b> 37:21 <b>buy</b> 55:8 299:14  <hr/> <b>C</b> <hr/> <b>c</b> 2:13 5:13 51:22 <b>calcium</b> 54:6 <b>california</b> 2:15 <b>call</b> 64:6 129:24 174:1 199:20 294:8 342:10 349:6 <b>called</b> 43:3,4 49:4,7 55:7 57:4,5 69:9	102:20 123:1 200:10 205:2 205:20 257:14 290:11 292:8 327:10 <b>calls</b> 342:17 <b>campion</b> 338:9 338:11,12,20 <b>canada</b> 46:22 71:17,20 279:6 <b>canadian</b> 75:7 310:6,24 <b>canadians</b> 308:5 <b>canal</b> 2:9 <b>cancer</b> 62:24 67:2,19 71:14 71:20 82:6,12 83:1,7 106:4,5 106:13,18,18 106:24 108:9 114:12 115:1,2 116:13 117:6 147:15 183:1 185:7 194:23 195:12,15,17 195:23 196:10 196:24 197:6,7 197:11 199:7 199:18 200:7 210:5 212:16 212:17,24,24 213:5,21,24 214:2,4 216:11 216:20 217:16 219:8,10 228:10,11,23 228:24 229:21 229:23 233:18 234:7,9,20 235:2 236:6 246:18,19 251:3 252:3,15 261:20,23 264:17,22 270:5,13 271:8 276:24 277:8 277:19 278:13	278:14,23 279:4,8 283:14 285:6,11 288:4 289:13 293:22 294:3,11 295:17 296:5 297:8,8,10,20 297:20 298:6,7 299:4,5 300:13 300:22 307:15 307:22 308:3 309:24 310:10 310:11 315:22 316:4,8,18,22 317:1,12 318:15 320:16 322:18 324:23 325:2 327:18 332:3,16,19 358:24 364:10 <b>cancers</b> 82:22 105:20 114:19 216:24 217:8 250:11 <b>candid</b> 155:23 300:5 <b>cant</b> 47:2 55:10 64:20 72:18 73:2 77:18 113:19 128:12 137:13 246:11 255:6 287:1 308:17 330:3,8 330:18,24 332:5 <b>capable</b> 126:14 365:15 <b>capped</b> 325:10 <b>caps</b> 70:12 325:16 <b>capsules</b> 71:2 <b>caption</b> 27:1 <b>capture</b> 30:5 31:11 <b>carcinogen</b> 195:18 197:15 197:23 198:22	198:24 212:13 237:24 244:1,4 244:7 258:1 259:19,21 262:16 263:1,1 266:12,13 281:10 282:7 290:3 292:13 292:19,24 293:9 358:17 359:17 361:12 <b>carcinogenesis</b> 262:17 <b>carcinogenic</b> 6:17 184:4 198:1 237:4 238:12,16 239:14 242:6 243:9,13,16 245:6,9 255:8 255:13 276:18 276:21 281:6 291:2 296:10 334:22,23 358:10 361:10 <b>carcinogenicity</b> 6:15 81:13 105:16 192:13 198:4 203:10 212:7 221:19 238:18,22 239:3,6 240:5 240:9,15 241:4 241:8 242:8,10 242:12,13,16 242:18 243:2,3 244:19,20 245:1,3 249:17 252:10 254:6 256:14,17 257:7 258:19 258:20 259:9 260:1,3,11 268:8,15,20 269:6 274:9,23 275:6,9,14 284:3,10 291:6
---	---	--	---	---



292:22 297:4 328:9,13,16 343:15 358:12 358:13,14,16 <b>carcinogens</b> 125:24 195:8 197:12 202:17 203:19 204:9 236:7,17 237:16 300:13 334:21 361:12 <b>carcinoma</b> 271:1 <b>carcinomas</b> 256:5,24 262:6 265:9,12,24 272:24 <b>care</b> 3:21 172:6 178:2 179:8,19 339:16 340:7 <b>career</b> 342:2 <b>carefully</b> 373:4 <b>carrie</b> 34:3,3 <b>carterii</b> 368:20 368:24 369:1 <b>cas</b> 4:17 19:1,2 19:12,15 109:14 166:4 171:24 172:1 172:24 350:7 368:15,16,21 368:22,24 369:7,14,17,21 369:24 <b>case</b> 28:20 30:3 30:8,21 32:4 32:13 33:8 45:3 46:8 47:9 47:11 50:16,19 71:10 73:9 74:16 75:15 92:5 109:2,6 110:24 123:6 123:11,17 124:4,22 125:2 126:3 133:6 134:19 153:21	204:20 214:21 227:12 253:9 257:18 268:5 293:1,13,18 312:20 325:24 325:24 334:12 336:12,13 337:15,20 343:6 345:14 346:1,3 348:7 352:15 353:14 354:19 361:23 362:1,14 369:5 <b>casebycase</b> 215:17 216:2 301:5 309:9 319:24 <b>casecontrol</b> 250:12 <b>cases</b> 1:8 10:9 44:24 79:20,24 161:21 186:16 250:12 306:1 306:11 321:15 <b>catalog</b> 111:3 127:2 <b>categories</b> 145:4 148:16 149:24 150:11 163:11 225:7 244:10 297:7 <b>category</b> 198:23 203:18,19 209:14 238:21 240:13 241:6 244:8,17 290:3 291:3 292:12 292:19,24 293:9 305:9 325:5,8,16,17 326:16,24 329:4 330:9,11 330:16 <b>causation</b> 113:7 114:5 199:18 <b>cause</b> 1:15 105:20 106:4	106:12,18 108:9 125:23 129:4 132:1 183:21 195:12 196:10,24 199:7 212:15 212:23 221:18 246:17 297:8,8 297:20 298:6 299:4 301:3 307:14 308:15 309:7 316:1,20 317:5 319:22 320:15 321:9 321:10 322:3 322:18 323:18 325:23 326:7 327:17 332:19 357:22 358:23 364:9,9 <b>caused</b> 144:1 278:13 <b>causes</b> 147:15 182:24 185:6 194:23 216:21 304:2,2 308:18 <b>causing</b> 297:9 297:20 298:7 299:5 <b>cavity</b> 219:24 <b>cedarwood</b> 369:11 <b>cedrus</b> 369:10 <b>cell</b> 218:2 230:24 265:11 277:13 285:22 308:21 321:14 328:8 <b>cells</b> 114:18 115:16 116:4 116:16 117:11 117:19,23 118:5,13,15,19 119:1,4 183:23 218:1 220:10 220:22 221:24 230:10,17,20	231:1,2 285:18 286:4 288:7 <b>cellular</b> 286:3 <b>center</b> 174:8 210:19 <b>certain</b> 11:13 13:2 63:14 66:22 80:24 135:13 145:17 163:23 165:15 215:4 217:5 228:4 255:15 257:14 268:20 334:15,18 355:3 363:8 <b>certainly</b> 61:22 68:17 82:8 128:4 133:24 139:24 193:11 216:15 306:17 306:18 331:19 349:22 353:10 <b>certainty</b> 142:5 246:11 362:6 <b>certificate</b> 372:2 <b>certification</b> 372:16 <b>certified</b> 1:17 372:12,13 <b>certify</b> 372:5 375:5 <b>certifying</b> 372:18 <b>cervix</b> 208:8 <b>cfr</b> 149:5 153:13 153:17,23 154:17 <b>chance</b> 227:15 364:22,24 <b>change</b> 19:23 142:6 294:14 352:22 353:8 370:11 374:4 <b>changed</b> 143:1 143:11,19,23 352:23 <b>changes</b> 7:13	20:1,14 142:12 143:6,7 144:4 144:7 352:9,13 352:20 369:5 373:11 375:9 <b>characteristic</b> 127:13 <b>characterizati...</b> 121:19 125:2 134:13 <b>characterize</b> 215:21 349:10 <b>characterized</b> 253:18 <b>charest</b> 2:8 <b>chase</b> 250:20 <b>check</b> 16:4,12 16:20 149:3 175:16 186:12 190:15 191:4 197:19 199:10 202:22 229:9 271:24 288:1 314:18,23 <b>checked</b> 176:7 366:14 369:3 <b>chem</b> 356:5 <b>chemical</b> 18:24 19:9 31:6,9,24 95:16 109:16 110:1,16,20 111:12 112:18 116:11 124:10 132:22 133:7 133:18,22 136:10,13,16 137:8 147:13 151:9 153:23 155:1 156:12 159:2,8,22 160:15 165:16 167:2 169:1 172:7 173:9 174:24 175:3 182:23 185:24 187:5 190:4,6 190:7,23
--	--	---	--	--



191:17 193:3,5 194:21 206:19 206:19 210:15 211:12,14 215:18 218:14 233:6,16,17 234:24 235:1 240:4 241:21 243:23 244:2 244:14 257:15 259:8 266:5 276:15 287:22 289:23 291:11 292:8 296:4,20 299:16 302:10 302:21 303:10 304:13 305:11 305:12 306:6 323:21,23 327:15 329:6 335:4 343:18 348:21 350:4 354:14,15 355:17 356:7 356:13,16 361:9 368:10 368:18 369:19 <b>chemicals</b> 19:10 19:13,17 22:16 31:10 34:9 35:18,21 38:14 48:15,18 50:10 50:13 52:10,10 52:11 63:10,22 64:18 65:7 67:19 73:16 75:18,22 81:11 81:19 82:19 92:20 105:7,13 105:20 106:4 106:11,17,21 107:11,24 108:8,14 109:8 109:9 110:18 111:1,5 112:5 112:12,16,20 114:10,17,24	115:11 116:11 124:2,5,16 126:13 127:3,6 127:14 129:11 133:14 134:6 134:18,23 135:4,12,19,23 136:9,19 137:3 138:3,11 139:3 139:13 140:6,7 140:9,11 141:3 141:23 142:6 142:17,19,24 143:11,18,23 144:2,13,19,23 145:17,21,24 147:3,8 148:7 151:8 153:4 154:7,11 156:7 156:14,16 157:15 160:21 162:10 164:4 187:10 192:10 192:17,23 193:14 195:7 195:11 196:9 197:9 198:19 199:5,19,20,23 199:23 200:10 200:12 201:7 202:11 203:7 212:6,6,10 214:24 215:5 215:10 216:9,9 217:14,14 220:5,7 232:21 236:4,16 237:14,15 238:11,17 243:12,15,19 268:20 269:3 296:12 297:5 297:19 298:4,5 298:21 299:3 300:11,24 303:17 307:23 308:7,24	309:14,15 313:7,19 314:16 315:17 319:21 320:11 321:9,19 322:12 323:16 325:21 326:4 326:17 328:5 329:2 330:21 331:17 334:6 334:14,20 335:18 341:17 341:17,24 342:8,10,11,14 342:18,19,21 342:22 343:12 344:5 345:6,7 346:17,23 347:4 348:18 349:15,20,24 350:18 351:9 351:12,18 352:2 356:1,4 362:20 363:8 368:14 <b>chemist</b> 52:2 53:16 151:13 362:10 <b>chemistry</b> 30:9 30:15 45:24 51:1,5 341:21 341:22 <b>chempub</b> 111:2 <b>chinese</b> 114:18 115:16 116:3 116:15 117:11 117:18,23 118:5,13,15,19 119:1,4 183:23 218:1 220:10 220:22 221:24 230:16,20 285:17 288:7 <b>chlorophyll</b> 150:16 369:13 369:15 <b>cho</b> 286:4	<b>choice</b> 200:11 <b>cholangiofibr...</b> 265:24 <b>choosing</b> 235:5 255:15 <b>christmas</b> 20:4 <b>chromatic</b> 117:22 <b>chromatid</b> 115:15 116:20 117:3,18 118:4 118:11,14 184:1 230:5,19 288:6 <b>chromosomal</b> 118:4,12,24 288:6 <b>chronic</b> 215:19 216:3,14 310:8 357:4 <b>cinnamal</b> 330:15,19 <b>ciprodex</b> 45:19 46:12 <b>cir</b> 109:20 149:5 149:11 153:3 155:2,21 156:2 156:6,12 180:21 181:15 186:13,20 187:4,18 188:3 188:4,9,11,14 191:6,8 288:23 289:4,10 301:19 327:6 340:11,14 344:3 363:8,10 363:20,21 <b>circuit</b> 347:13 <b>circulated</b> 78:24 79:1 <b>circumstance</b> 244:24 267:16 291:17 <b>circumstances</b> 211:16,17 306:22 338:14	<b>cirs</b> 155:5 <b>citation</b> 91:21 104:15 150:22 158:11 289:8 <b>citations</b> 28:10 <b>cite</b> 28:1 88:14 90:19 91:20 92:3 103:15 107:2,6 150:13 150:19 181:7 182:7 237:22 275:13 363:7 <b>cited</b> 27:10 28:4 28:20 29:21 78:13 106:20 124:15 179:3 179:23 275:15 278:21 284:14 305:23 325:15 <b>cites</b> 88:15 <b>citing</b> 290:8,11 <b>citral</b> 117:13 <b>citrus</b> 185:15,17 186:7,10 218:15,20 <b>city</b> 347:13 <b>civil</b> 1:19 <b>claim</b> 162:23 169:5 180:15 180:24 236:3 236:15 243:24 244:3 257:24 <b>clarified</b> 172:6 <b>clarify</b> 267:18 295:14 296:1 319:16 341:12 <b>class</b> 56:22 <b>classes</b> 56:4,20 56:22 <b>classifiable</b> 198:4,21 238:18 240:5,9 259:9,16 260:11 266:18 269:5 274:22 <b>classification</b> 7:7 202:10
--	---	--	--	---

203:7,14 238:7 240:3 242:5 243:8 259:8,14 260:7,10 267:5 268:1 290:20 291:10 292:23 293:17 298:3 304:11 358:6 <b>classifications</b> 239:24 260:18 261:17 297:4 304:1,12 <b>classified</b> 110:11 131:24 198:23 221:23 243:20 243:24 244:3 244:13 259:2 259:23 266:21 276:14 290:2 291:4 292:18 293:9 296:13 297:19 298:5 301:1 315:17 321:20 <b>classifies</b> 296:20 300:11 <b>classify</b> 291:18 322:12 <b>classifying</b> 110:9 292:12 303:17 <b>clay</b> 52:4,5 54:5 54:19,21,22 <b>cleanser</b> 218:22 <b>clear</b> 10:21 11:21 14:16 36:12 78:10 93:19 95:14,17 184:18,24 185:1 186:22 199:2 220:20 235:9 237:13 239:11 243:18 249:8 261:15 282:9 284:19 295:3,5 344:2 367:10	<b>clearly</b> 275:3 327:21 343:2 369:8 <b>click</b> 150:21 <b>client</b> 60:4,16 326:10 330:24 <b>clinical</b> 43:8 <b>close</b> 219:21 329:22 <b>closed</b> 43:6 <b>closely</b> 345:9 <b>closer</b> 270:8 <b>coadministered</b> 212:13 <b>coast</b> 265:19 <b>coating</b> 65:22,22 356:12 <b>coatings</b> 69:9 <b>cocarcinogen</b> 262:7 361:7,8 361:9 <b>cocarcinogenic</b> 212:11 <b>code</b> 149:11 150:23 151:3,9 151:17 152:7 154:2,8,12 <b>codex</b> 153:4 187:6 <b>cofounded</b> 43:3 <b>cohort</b> 250:11 250:14,15 <b>collate</b> 31:18 111:12 112:23 <b>collating</b> 92:23 <b>collation</b> 90:23 <b>colleagues</b> 38:13 <b>collect</b> 112:23 194:1 <b>collected</b> 127:15 290:10 298:20 <b>colorant</b> 150:17 <b>colorants</b> 51:22 51:22 <b>colors</b> 146:16 <b>columbia</b> 205:20	<b>column</b> 19:1,2 148:4,5,16 149:1 150:12 177:21 180:10 180:11 303:24 350:3,5,6,7 <b>columns</b> 350:3 <b>com</b> 1:23 2:5,6 2:10,16,20 3:5 3:9,14,20 <b>combination</b> 135:15 289:21 <b>come</b> 16:9 57:16 59:14 150:1 261:16 268:19 <b>comes</b> 29:8 218:16 <b>comfortable</b> 74:8 84:23 <b>comment</b> 353:21 <b>comments</b> 19:3 354:2 <b>commerce</b> 2:4 <b>commercial</b> 55:3 113:3 360:3 <b>commercially</b> 65:24 205:3 <b>commission</b> 290:14 375:20 <b>commit</b> 287:24 <b>committed</b> 139:17 <b>committee</b> 2:11 60:13,16 181:23 237:1 290:1,12 292:6 292:17 <b>common</b> 291:21 314:8 <b>commonly</b> 177:23 179:5 240:13 <b>communicated</b> 71:12 <b>communication</b>	68:13 <b>communicatio...</b> 68:9 71:16,19 <b>communis</b> 288:22 289:2 289:16 <b>community</b> 86:12 <b>companies</b> 46:9 46:10 51:14 54:23 64:24 65:2 169:14 186:23 210:21 231:8,15,20 299:7 335:15 348:14 369:4 <b>company</b> 43:10 43:12,18 46:14 48:6 52:24 53:2 54:13,16 57:3,5 59:24 60:2,8 64:20 66:14 205:11 205:19 206:2,6 299:12 304:17 334:1 <b>compares</b> 19:15 <b>comparison</b> 100:13 368:9 369:24 <b>compatible</b> 220:19,21 <b>competent</b> 58:8 58:21 59:10,13 60:23 <b>complete</b> 28:9 29:24 31:3 122:3 140:1 336:24 <b>completed</b> 337:9 365:22 <b>completely</b> 146:10 354:10 <b>completing</b> 53:9 <b>completion</b> 372:8 <b>compliance</b>	105:9 144:14 145:20 162:21 343:9 <b>component</b> 69:10 <b>components</b> 32:5,14 208:22 214:18 323:3 325:7 348:21 <b>composition</b> 31:22 112:6 124:11 141:18 142:7 143:10 200:20 210:1 328:23 330:1 346:24 <b>compositional</b> 142:12 <b>compositions</b> 55:2 64:9,14 64:22 233:4 <b>compound</b> 132:3 291:21 <b>compounds</b> 281:15,24 291:18 292:4 301:14 362:16 <b>computer</b> 12:11 12:12,15,23 15:10 17:12 24:8 166:9 224:18 240:1 270:2 276:11 <b>concentration</b> 136:18 137:2 138:2 143:18 143:22 168:17 203:13 220:11 220:13 221:4 225:14 230:18 232:23 252:21 286:5,11 288:8 306:5,13 312:19 327:1 330:12 347:3 349:20 354:14 <b>concentrations</b>
---	--	--	---	--

272:19 284:21 309:3 350:18 352:1 <b>concept</b> 125:13 <b>concern</b> 144:20 144:24 145:3,7 145:16 146:1,7 146:20 147:4,9 148:5,8,18,24 150:1,3,12 151:3 153:24 154:18 155:1 156:13,21 162:11 174:24 185:20 186:21 188:5,18 190:5 191:8 192:18 192:24 193:3 193:16 194:9 <b>concerned</b> 138:16 <b>concerns</b> 67:1 193:6 325:11 325:15 <b>conclude</b> 274:8 <b>concluded</b> 245:6 245:8 278:12 284:19 288:23 371:13 <b>concludes</b> 371:10 <b>conclusion</b> 132:7 170:16 172:3 222:16 274:7,24 275:2 275:4 <b>conclusions</b> 93:24 126:20 131:4 <b>conditions</b> 119:2 <b>conducted</b> 23:11 287:18,20 <b>conference</b> 338:18 <b>confident</b> 71:3 <b>confidential</b> 109:4	<b>confused</b> 147:22 <b>confusing</b> 145:12 146:10 147:17 159:15 <b>confusion</b> 14:15 <b>congress</b> 3:3 <b>conjunction</b> 164:1 <b>connected</b> 54:22 <b>connection</b> 21:13 63:16,18 68:23 76:8 155:12 213:19 <b>consider</b> 30:12 30:14 31:21,22 33:11 38:2 39:7 40:8 56:19 58:5,16 58:18 59:8,12 107:19 108:5 138:7 153:9 199:11 213:23 231:16 255:16 269:9 302:10 302:20 303:6 363:21 <b>consideration</b> 105:23 128:5 144:5,9 231:11 247:22 352:12 355:19 357:17 <b>considerations</b> 231:20 357:16 <b>considered</b> 5:8 29:11,15,19,21 29:24 30:2 36:5,16 74:24 76:15,21 77:1 77:4,13,21,23 110:10 118:23 126:2 128:6 152:19 193:10 208:14 247:17 248:16 273:17 274:3,11,17 286:1 289:10 292:11 293:1,3	313:10 318:9 345:2 <b>considering</b> 40:10,13 337:1 <b>considers</b> 78:7 197:22,24 237:4 261:15 <b>consistent</b> 31:19 99:15 122:23 128:2 292:2 297:14 <b>consists</b> 18:21 <b>constituents</b> 335:4 <b>constitute</b> 148:7 <b>consultant</b> 43:24 54:15 55:1 <b>consultants</b> 64:8 64:16 <b>consulting</b> 42:4 42:9,11,12,17 42:22 44:11,19 60:4 362:15 <b>consumed</b> 129:8 <b>consumer</b> 5:14 7:8 32:7,16,23 33:2 95:19 96:23,24 97:7 97:8 99:19 144:13 161:20 335:15 347:15 348:14,15 <b>contact</b> 37:14 337:15 <b>contacted</b> 36:21 37:1,2 63:7 65:1 337:19 <b>contain</b> 30:22 300:7 <b>contained</b> 19:22 24:1 77:21 233:22 336:19 344:24 370:6 <b>containing</b> 205:4 <b>contains</b> 41:19	69:6 248:20 349:23,24 <b>contaminant</b> 131:5,13 <b>contaminated</b> 33:10 <b>contd</b> 3:1 5:2 6:2 7:2 <b>content</b> 137:15 355:7 <b>context</b> 129:7 <b>continue</b> 189:16 249:12 <b>continues</b> 97:24 98:2 <b>contract</b> 10:10 47:10,20 <b>contractor</b> 210:23 <b>contrary</b> 306:21 <b>contribute</b> 81:11 105:14 192:11 200:12 210:5 212:7,15 212:23 246:17 300:13 307:14 307:22 309:23 320:16 322:18 327:17 328:12 332:2,15 343:13 <b>contributes</b> 229:20 233:17 235:2 <b>contributing</b> 364:9 <b>contribution</b> 54:18 <b>control</b> 99:21 142:6 210:19 280:3 372:18 <b>controls</b> 279:21 280:1 <b>conversations</b> 37:16 <b>cookies</b> 229:5 <b>cooking</b> 229:6	<b>coowner</b> 57:3 <b>copied</b> 90:4,8 96:2 100:6 <b>copies</b> 25:13 248:18 <b>copper</b> 150:16 369:13,14 <b>copy</b> 24:11 26:6 41:5,7 90:13 91:5 93:8 158:5 248:9 251:6 368:5 <b>copying</b> 90:21 92:24 <b>corporation</b> 43:6 <b>correct</b> 10:14 12:1,2 17:12 21:11 28:3,23 41:12 50:5,6 50:10 51:2 53:19 55:17,18 55:20,21 56:8 56:14 60:18 61:2,11,20 62:11,18,19,21 63:2 65:8,11 67:5 68:2,3,10 70:21 75:4 76:2 81:16 83:13,14 86:22 88:7,16,21 89:1 90:16 92:8 93:11 97:11,17 98:6 101:21 102:4 103:11 105:10 106:5,7,13,14 108:9,11,15,17 108:18 111:8 112:13 115:1 115:21 117:6 123:17 124:7 124:22,23 125:3,4,18,19 126:3 127:9 128:10,11,14
---	---	---	--	--

129:18 131:21	262:18 263:7	<b>corrections</b>	117:22 198:3	347:13 366:5
132:10 133:8	263:17 264:15	373:5,7 375:9	198:20 236:11	373:20
133:23 134:4	265:14,15	<b>correctly</b> 162:1	236:20,23	<b>cover</b> 247:15
134:10,20	268:2 269:6	178:3,17	237:18 262:23	<b>covers</b> 154:9
135:20 143:13	271:8,18 272:5	179:10 180:17	262:24 263:5	<b>cpsa</b> 97:24
144:17 145:18	274:23 276:24	181:1 240:18	263:11,15	<b>cream</b> 205:3
154:21,22	277:9,19	254:13,24	264:16,23	<b>creams</b> 325:18
156:10 158:22	278:23 279:1,2	255:4,22 261:6	266:17,21	325:19
158:23 159:4,9	282:3,7,15	293:6	267:4,24 268:6	<b>create</b> 54:20
159:23 160:15	283:14 286:13	<b>correspond</b>	268:12 269:1	112:5 151:15
161:3 162:7	286:23 288:17	369:14,18	269:12	153:8 175:11
164:5 165:1,8	288:18,20	<b>corrosive</b>	<b>counsel</b> 3:21	<b>created</b> 31:10
165:18 168:4	289:17 291:13	284:21	10:17 13:1	92:22 133:15
168:19 169:9	291:15 293:10	<b>cosmetic</b> 5:20	17:23 18:16	<b>creating</b> 31:21
170:21 171:21	293:19 294:4	50:19 51:16	21:14 23:16	61:23 152:19
172:9,20	295:18 296:5,6	53:18,22 55:14	28:19 38:23	<b>creation</b> 55:2
174:20 175:7	297:21 298:21	61:1,5,10,20	39:4,23 40:9	<b>credit</b> 89:21
176:13 177:12	299:5,22 300:2	61:23 62:5	40:18,21 49:23	<b>cresol</b> 237:6
178:22 183:6	301:24 302:12	63:4 118:21	71:23 74:9,19	<b>cresols</b> 233:23
185:2 186:11	302:22 303:4	149:6 150:16	75:2 76:8	284:17,21
187:20 188:5	303:11 304:13	151:13 155:2	125:8 127:1	<b>crinone</b> 205:2
190:11 191:17	307:4,15	155:11 180:21	137:22 138:15	205:22,24
192:18 194:18	309:16 311:7	182:16 187:18	183:11 267:1	<b>criteria</b> 163:24
194:24 196:15	312:21,22	312:16 313:7	339:17 340:8	187:10 242:3
196:24 198:9	315:3 317:24	342:7 363:14	358:1 360:17	<b>critical</b> 185:24
198:10 199:8	318:17 320:12	<b>cosmetics</b> 51:23	362:19 365:6	203:24 323:4,7
199:15 200:14	320:24 322:1	54:22 69:14	368:1 370:4,10	323:18 324:9
201:1 208:15	322:19,22	97:15 150:18	<b>counselor</b> 59:7	350:17
209:16 211:14	323:8 324:10	153:3 154:10	60:22 61:23	<b>crosslinks</b> 230:9
211:24 212:1,9	324:23 325:2	178:2 179:8	84:3 90:20	<b>crossreference</b>
213:22 214:2	326:8 327:18	180:24 181:17	93:20 125:20	4:17 19:15
214:18,21,22	328:20 329:8	181:24 182:2	<b>count</b> 149:14	109:15 191:3
216:11 217:2	331:11 332:3	289:2 311:22	<b>counted</b> 135:9	<b>crowley</b> 1:14 4:4
217:17 221:4	332:20 334:9	312:13,15	136:1,2	4:22,23 5:5 9:3
221:11 222:10	335:5,8,15,16	313:9,13	<b>couple</b> 31:15	9:15,23,24
223:4,12	335:20 336:2,3	<b>cottageau</b> 310:4	146:5 185:12	11:23 15:22
225:24 226:13	336:10,11,15	<b>coughlin</b> 3:7	206:16 262:11	17:19 19:2
226:20 228:12	337:2,3,5,12	<b>coughlinduffy</b>	263:22 264:2	25:6 34:4,5,13
231:23 232:3	337:16,24	3:9	295:2 356:24	34:18 35:8,12
233:8 238:24	340:12,13,15	<b>couldnt</b> 37:22	<b>course</b> 12:22	47:18 75:17
243:22 244:15	340:16 342:23	39:19 55:10	44:16 127:20	76:4 105:6
244:23 245:7	343:1 346:4	128:1 201:3,16	334:3	117:9 192:9
246:4,19	347:1,6 360:8	204:11,21	<b>courses</b> 146:5	228:4 235:17
252:23 253:10	360:18,19	270:17 322:7	<b>court</b> 1:1 9:6	246:2 252:13
257:21 259:5	361:1 367:13	324:11,13	24:11 72:1	258:23 259:2
259:15 261:11	367:14 375:7	339:21	319:12 329:18	282:23 294:24
261:24 262:8,9	<b>corrected</b> 91:22	<b>coumarin</b> 6:22	346:3 347:12	319:16 329:17

333:16 335:3 339:4,15 340:5 341:5,11 364:2 364:7 365:10 366:11 367:22 371:11 372:8 375:15 <b>crowleys</b> 5:7,8 26:6 <b>crude</b> 6:8 135:14 164:18 170:1,12,19 171:12,15 172:1,17 <b>csr</b> 1:16 372:13 <b>cue</b> 73:3 <b>culture</b> 286:4 <b>cultured</b> 183:23 230:9 <b>cumulative</b> 201:20 <b>current</b> 22:7 26:17 141:24 142:9,18 159:1 159:7,22 160:6 161:19,22 280:4 346:23 358:6 <b>currently</b> 51:15 <b>curriculum</b> 5:5 26:9,17 50:21 <b>customers</b> 70:9 <b>cut</b> 250:20 261:9 268:13 <b>cutoff</b> 203:13,19 <b>cv</b> 26:9,15 60:4 <b>cytogenetic</b> 118:18 <b>cytogenic</b> 116:19 117:2 117:10 230:15 285:17 <b>cytokines</b> 308:24 <b>cytotoxic</b> 116:3 116:15 119:3 220:9	<b>cytotoxicity</b> 221:23 <hr/> <b>D</b> <b>d</b> 1:14 4:2,4 9:15 51:8,22 55:19 335:3 372:8 375:15 <b>d3</b> 279:22 <b>dad</b> 213:12 <b>dadgum</b> 295:22 <b>damage</b> 116:20 117:2 118:19 285:18 <b>data</b> 4:22 19:19 24:3 74:10 76:6,14 83:21 133:10,16 154:20 161:18 184:16 185:6 211:19 220:18 225:6 230:3 243:6 247:19 249:17 252:8 252:10 254:6 256:14 258:19 258:20 261:22 264:21 268:7 271:15,19 275:8 277:3 291:6 305:13 305:15,21 320:2,8 344:15 344:18,23 345:23 363:10 <b>database</b> 109:23 110:15 139:5 140:5,8 210:10 210:17 211:1 211:19 359:24 360:3,18 <b>databases</b> 74:14 109:15 111:10 150:14 151:1 343:21 <b>date</b> 9:4 20:8 22:9 37:9,24	63:10 373:9 375:15 <b>dated</b> 40:22 372:14 <b>dates</b> 38:4 <b>daughters</b> 220:23 <b>david</b> 64:19 <b>day</b> 1:16 152:13 159:16 201:22 202:3 334:3 375:19 <b>days</b> 18:11 19:6 352:17 373:16 <b>dbp</b> 181:17 <b>dc</b> 2:19 3:19 <b>deal</b> 40:1 341:24 <b>dealing</b> 329:4 <b>death</b> 284:23 308:22 <b>december</b> 15:6 17:8,17 18:4 20:12 41:1 80:4 365:22 <b>decide</b> 31:13 49:24 189:20 <b>decline</b> 39:10 <b>deem</b> 11:20 <b>deemed</b> 373:19 <b>deepdive</b> 216:16 <b>defendant</b> 1:14 2:21 3:10,15 3:20 7:8 49:6 <b>defendants</b> 9:10 348:13 365:24 <b>defense</b> 40:21 46:3,6 207:4 <b>defer</b> 206:24 207:12,14,23 215:15 303:10 <b>deficient</b> 366:19 <b>define</b> 30:6 58:1 145:3 193:2 308:12 <b>defined</b> 89:18 147:6 209:15 <b>definition</b> 5:12	89:24 90:2 148:17 165:10 193:9 241:16 241:20 259:7 269:3 370:22 <b>definitions</b> 261:4,11 370:5 370:17 <b>degeneration</b> 117:14 218:2 <b>degree</b> 17:20 18:1 53:12,16 158:4 341:21 341:21 360:16 362:6 363:9 366:16 <b>degrees</b> 47:2 <b>dehydrated</b> 101:19 <b>dekker</b> 23:5 <b>delay</b> 356:12 <b>delisted</b> 169:11 <b>delivery</b> 206:1 <b>demir</b> 230:11 <b>demonstrate</b> 183:19 185:5 317:10 <b>demonstrated</b> 106:22,23 114:17 182:11 197:15 255:12 262:7 328:6,6 <b>demonstrates</b> 265:21 328:8 <b>demonstrating</b> 185:10 <b>dep</b> 177:23 179:6 180:15 181:16 182:2 182:12 352:24 <b>department</b> 310:24 <b>dependent</b> 81:13 <b>depends</b> 188:20 191:12 221:13 <b>deponent</b> 375:2	<b>deposed</b> 48:1 58:14 <b>deposing</b> 373:16 <b>deposition</b> 1:13 4:15 8:2 9:3,12 9:12 10:1,4 11:5,8,8,18,24 12:5,19 13:1,7 18:12,18,21 19:22 20:2 21:13,14,19,23 22:5,19 23:18 23:21 25:20,23 26:10,14,16,21 26:23 27:2 29:8,10,24 30:20 35:1 37:10 41:15 46:16,21 47:23 64:1 74:22 79:22 80:3,15 85:24 89:17 96:19 104:7 120:11 121:9 155:10 157:23 157:24 160:23 163:3 164:12 167:13,18,22 170:9 171:11 173:19 177:16 203:2 224:22 239:12 240:2 246:2 248:13 263:10 290:18 295:1 362:3 364:19 366:1,9 370:3 371:10 371:13 372:6,8 372:9 373:3,13 373:17,18 <b>depositions</b> 45:10,13 <b>deps</b> 1:23 <b>depth</b> 232:22 <b>derek</b> 286:2 <b>dermal</b> 130:7 272:24 284:20
--	--	--	--	---



311:22 312:12 312:15 323:7 325:11 <b>dermatology</b> 161:12 <b>describe</b> 52:9 349:21 <b>described</b> 31:16 52:13 53:19 55:13 56:22 169:24 171:5 172:18 194:17 297:1 301:12 301:15 336:1 <b>describes</b> 19:17 50:22 161:5 171:5 194:12 <b>describing</b> 22:1 23:9 <b>description</b> 4:14 5:4 6:4 7:4 18:24 240:11 240:12 350:4 <b>descriptor</b> 30:19 <b>design</b> 128:2 <b>designated</b> 281:4 323:3 <b>detail</b> 122:22 250:16 362:13 <b>detection</b> 79:12 <b>determination</b> 139:1,6 320:15 358:22 359:6,6 <b>determine</b> 135:19 138:2 300:11 330:8 356:20 <b>determined</b> 104:10 156:3 259:20 269:2 274:21 358:2 359:15 <b>determining</b> 153:22 281:9 <b>develop</b> 231:8 231:20 <b>developed</b> 64:9	120:3 205:1,7 208:24 278:9 <b>developing</b> 30:3 35:13 73:10 216:24 <b>development</b> 54:24 70:3 212:16,24 216:19 219:8 228:23 229:20 234:2 246:18 310:10 315:22 316:4,18 317:1 317:11 318:15 332:2,15 342:4 342:5 <b>developmental</b> 183:21 <b>devote</b> 42:15,21 <b>dictate</b> 283:4 <b>dictionary</b> 370:23 <b>didn't</b> 19:11 36:8 39:11 84:16 96:7 99:23 103:15 126:18 128:6 149:14 149:14 150:18 159:18 201:4 204:22 206:17 226:11 237:3 287:15,24 290:7 299:14 305:3 309:19 322:8 324:14 351:10 352:21 353:3,8 354:8 369:5 <b>diet</b> 272:20 <b>diethyl</b> 119:6 174:22 175:5 175:12 176:12 177:23 178:21 179:5,16 182:8 182:23 183:20 183:24 184:4 185:6 188:8	353:2,5 <b>dif</b> 19:18 <b>difference</b> 29:17 128:9 207:17 <b>differences</b> 19:18 <b>different</b> 34:19 65:2 92:1 110:5 112:18 113:1 121:1 129:20 130:5 130:16 145:4 145:11,13 146:11,16,19 149:15 171:20 179:14 196:1 199:3 230:24 231:2 267:14 267:15,16 274:16 298:21 305:7 353:5 357:13 368:15 368:21 <b>difficulty</b> 313:24 <b>diluted</b> 306:6 327:2 <b>diluting</b> 306:11 <b>dimethyl</b> 183:24 <b>direct</b> 230:23,23 247:4 256:10 270:21 372:18 <b>directed</b> 357:11 357:12 <b>directing</b> 228:3 <b>direction</b> 8:5 <b>directly</b> 102:19 <b>directors</b> 51:16 54:9 <b>disagree</b> 92:12 <b>disagreement</b> 206:7,10 <b>disc</b> 105:3 192:6 294:14,21 <b>discern</b> 107:17 107:22 <b>disciplines</b> 341:24	<b>disclose</b> 66:23 77:12 80:10 <b>disclosed</b> 19:9 36:16 41:23 76:20 135:10 136:3 140:3 304:21 327:12 368:13 <b>disclosure</b> 98:1 98:17 349:3 <b>discuss</b> 296:12 315:16 321:19 331:5 <b>discussed</b> 80:11 186:13 200:15 214:12 244:17 246:16 288:16 302:9 309:12 322:9 <b>discussing</b> 334:4 <b>discussion</b> 68:18 241:15 261:10 295:14 296:19 312:17 <b>discussions</b> 338:19 <b>disease</b> 113:12 210:19 <b>dismissing</b> 127:24 <b>disorders</b> 233:24 <b>dispute</b> 10:11 47:7,8,21 48:2 48:7 49:5,21 <b>disputes</b> 10:10 45:21 50:5 <b>disrespectful</b> 317:21 <b>dissolved</b> 353:1 <b>dissolves</b> 65:21 <b>distillate</b> 165:21 166:3 168:8,12 168:18 171:21 172:9 <b>distillates</b> 6:7 164:21 167:24	<b>distributed</b> 81:23 214:14 <b>distribution</b> 232:7 268:10 <b>district</b> 1:1,2 <b>disturbances</b> 234:1 <b>division</b> 52:1 <b>divisions</b> 52:2 <b>dlimonene</b> 6:20 116:2 198:3 218:9 219:4,7 219:18 220:9 220:14,21 221:20 222:6,9 222:17 225:15 225:22 236:10 237:18 257:23 257:24 258:5,9 259:3,18 261:19,24 262:3 263:16 266:20 267:4 267:23 269:1 303:23 <b>dmp</b> 181:16 182:2 <b>dna</b> 116:19,20 117:2,2 118:19 285:18 <b>dnaprotein</b> 230:9 <b>doctor</b> 62:10 103:5 113:18 114:22 120:14 140:1 151:23 249:12 254:19 260:21 273:8 273:20 280:17 281:16 283:12 365:21 <b>doctorate</b> 341:22 <b>document</b> 1:8 4:19 5:22 11:14,19 12:4 14:11 16:20,23
--	--	---	--	---



18:14 19:8,14 21:24 22:12,16 26:22 27:20 87:4,22 120:19 143:5 155:22 158:8,15 160:1 165:5 166:11 246:8 248:17 252:4 290:19 346:21 352:7 365:8,14,17,20 365:22 369:23 <b>documents</b> 8:8 12:7 13:2 23:24 24:23 25:11,13 36:2 74:11,15,17,18 74:24 75:3,3 76:7,14 142:7 145:22 <b>doesnt</b> 82:1 138:16 146:17 188:14 219:17 227:11 260:6 285:8 294:11 327:6 <b>dogs</b> 274:17 <b>doing</b> 12:22 25:10,17 34:24 39:24 43:7 74:3 100:12 109:13 112:6 112:21 201:5 224:17 225:2 251:10,13 292:3 302:16 337:1 348:20 350:22 373:8 <b>domain</b> 360:10 360:12 <b>donath</b> 3:7 333:17 <b>donors</b> 230:7 <b>dont</b> 10:18,19 10:19 12:20 15:13 17:16,16 18:9 20:9	24:18 25:1 36:6 37:9,23 48:10 49:21 55:6 56:15,17 62:7,13 68:12 68:17 69:3 70:7 76:20 78:16 79:11,17 80:7,10 84:8 84:14 87:3 91:10,18 93:13 93:13 94:6 95:1 98:9,11 100:13 103:6 112:24 114:14 122:20 124:16 125:22 126:17 128:16 132:6 132:24 133:15 136:22 137:5 139:16 142:4 146:2 155:15 155:21 165:12 166:7 169:20 170:23 174:1 181:12 183:6 186:17,24 187:12 189:2 189:15 193:18 201:24 204:7 205:21 210:7 213:10,12,14 213:18 214:8 218:16 221:22 222:4,19 224:6 225:21 227:1 229:12 230:11 239:7 241:14 242:2 246:12 250:17 252:20 261:8 264:9,19 267:8 268:13 269:12 270:9 277:22 281:18 282:18 283:3 283:17 285:23 289:22 293:24	297:23 299:16 300:4 310:16 310:21 312:3 312:18 315:6 315:12 316:14 317:19 318:2,5 318:7 325:14 326:12 328:11 328:22 330:17 331:15 333:3 336:13 341:1 347:22 348:2 349:6 350:12 363:24 366:15 368:2 <b>dosage</b> 301:23 <b>dose</b> 121:17 124:3,17 125:13 126:1,2 128:21 131:21 131:23 132:14 133:7 134:3 201:1,7,13,20 207:17,18 209:13 221:11 225:22 233:5 252:20 266:5 272:15 285:9 309:6,13 330:12 354:13 354:15,18,24 357:19 <b>doseandexpos...</b> 129:6 <b>doses</b> 274:16 287:21 357:8 <b>dosing</b> 119:8 216:14 <b>dozen</b> 233:3 <b>dr</b> 4:22,23 5:5,7 5:8 9:3,24 11:23 15:22 17:19 25:6 26:6 75:17 76:4 79:19 80:2,15,19 97:21 105:6	117:9 136:4 141:4 192:9 228:4 235:17 246:2 252:13 258:23 259:2 282:23 294:24 310:18 319:16 329:17 333:16 337:23 338:2,9 338:11,12,20 339:4,15 340:5 341:5,11 364:2 364:7 365:10 366:11 367:22 371:10 <b>draw</b> 93:24 132:7 309:2 355:14 <b>drawing</b> 266:24 <b>drawn</b> 90:11 126:20 <b>drew</b> 90:19 94:1 170:16 172:3 275:4 <b>drive</b> 4:21 23:17 24:14,20,22 25:3,7,15 <b>dropbox</b> 41:10 <b>drown</b> 129:3 <b>drug</b> 46:18 57:14 59:22,23 180:2,13,15 205:24 331:10 331:12 342:3 <b>drugs</b> 64:11 97:14 154:10 211:23 257:14 257:14 313:15 356:12 362:15 <b>duct</b> 265:24 <b>due</b> 325:11 352:18 <b>duffy</b> 3:7 <b>duly</b> 1:15 9:16 372:5 <b>duration</b> 253:8 <b>dydek</b> 75:6	109:10 135:10 310:23 <b>dydeks</b> 79:19 136:4 141:4 310:5,18 337:23 338:2 <hr/> <b>E</b> <b>e</b> 4:2,12 5:2 6:2 7:2 374:1 <b>earlier</b> 114:16 131:22 182:13 193:22 194:14 194:17 200:15 204:4,7,16 214:12 220:2 223:20 302:9 309:12 312:6 335:22 337:14 341:13 344:16 350:8 357:20 361:6 370:3 <b>early</b> 78:7 306:9 <b>easier</b> 174:2 <b>easily</b> 91:21 <b>east</b> 1:18 <b>eastern</b> 1:2 <b>easy</b> 167:6 <b>eat</b> 130:11 <b>eaten</b> 229:5 <b>edited</b> 23:3 <b>educate</b> 63:21 <b>education</b> 50:22 51:12 53:9 56:23 62:18 122:10 <b>effect</b> 41:7 203:24 222:16 262:7 323:4,18 324:9 <b>effectively</b> 368:17 <b>effects</b> 110:15 186:1 193:4 210:14 214:24 215:10,19 216:3 230:14
--	--	---	--	--

286:4 323:7 356:2 <b>effort</b> 77:12 78:12 90:19 107:16,21 110:21 301:6 <b>efsa</b> 110:3 <b>either</b> 24:15 32:20 36:4,15 37:3 40:17 77:2 91:19 106:4,17 124:5 142:24 143:12 143:19 159:3 161:23 194:22 199:6 225:15 225:23 286:22 298:6 302:11 327:17 369:20 <b>element</b> 134:2 <b>elements</b> 260:17 <b>elicit</b> 300:18 <b>eliminated</b> 81:24 97:9 214:14 <b>elimination</b> 232:8 <b>ellis</b> 2:13 3:12 <b>email</b> 76:17 <b>emailed</b> 76:10 76:13 <b>employee</b> 54:12 <b>employees</b> 44:2 <b>employment</b> 206:13 <b>enable</b> 201:5 253:2,14 302:16 309:20 324:15 <b>endanger</b> 285:23 <b>endeavor</b> 15:18 <b>endeavoring</b> 228:5 <b>ended</b> 338:16 <b>endometrial</b> 272:3	<b>engage</b> 57:13 64:9 186:23 <b>engaged</b> 38:3 49:16,24 50:8 <b>engagement</b> 38:1 <b>engines</b> 369:15 <b>enhancers</b> 81:21 <b>enlighten</b> 120:7 <b>ensure</b> 122:22 <b>enter</b> 189:4 219:23 231:16 231:17 <b>entered</b> 220:16 <b>enterosorbents</b> 43:20 52:3 54:4,9 <b>enters</b> 328:3 <b>entire</b> 28:24 96:1 202:20 258:10 268:4 269:21 276:7 <b>entirety</b> 154:9 <b>entities</b> 1:15 2:21 57:8 134:6 <b>entitled</b> 4:20 5:9 5:12,14,19,22 6:9,12 <b>entity</b> 290:11 <b>entry</b> 5:16 14:2 37:12 100:7,20 102:8 164:17 164:20 168:12 <b>environmental</b> 96:5 161:13 237:2 281:4 290:2,13 292:7 <b>enyl</b> 173:15 <b>epa</b> 5:9,19 85:13 85:15,20 86:3 86:10 88:14 104:15 120:11 197:23 237:3 281:8 <b>epidemiologic</b> 195:9,22	196:22 199:4 217:13 <b>epidemiological</b> 199:17 275:8 <b>epidemiology</b> 106:16 196:7 <b>epithelia</b> 278:7 <b>equal</b> 203:20 <b>equivocal</b> 184:3 220:21 <b>errata</b> 373:6,9 373:11,15 375:11 <b>errors</b> 369:9 <b>escaping</b> 205:14 <b>especially</b> 72:20 216:3 <b>esq</b> 2:3,3,8,13,18 3:3,7,12,17 <b>essential</b> 167:9 354:18 <b>essentially</b> 110:23 351:1 351:21 <b>establish</b> 134:6 196:22 <b>established</b> 128:3 193:22 213:19 222:7 238:8 308:4 311:11,21 325:7 343:9 <b>establishes</b> 364:8 <b>ester</b> 119:7 <b>esters</b> 6:13 176:21 179:15 183:20 <b>estimate</b> 16:22 17:2,6 18:2,3,7 47:4 73:20 286:20 <b>et</b> 115:19 116:6 <b>ethenyl</b> 169:1,6 173:5,12,21 197:12 <b>ethical</b> 85:9	93:22 <b>ethically</b> 283:24 285:23 318:18 319:2,7 <b>ethics</b> 314:2 318:2 <b>ethy</b> 173:12 <b>ethyl</b> 52:19 118:3 287:8 288:14 <b>etiology</b> 213:14 <b>etongue</b> 64:10 64:21 <b>eu</b> 149:12 <b>eugenol</b> 6:23 118:11 198:3 198:21 236:13 236:21,24 237:18 266:9,9 266:12,17,21 267:3,23 269:2 269:18 270:5 270:12 271:7 272:15,17 274:21 275:6,9 <b>europe</b> 237:2 <b>european</b> 110:3 118:7 127:21 149:13 198:24 287:6,16 288:11 290:1 290:14 301:17 <b>evaluate</b> 57:7 84:6 161:17 186:14 187:19 <b>evaluated</b> 204:23 257:4 358:20 367:13 <b>evaluating</b> 6:12 191:6 <b>evaluation</b> 6:17 21:21 156:1 186:20 188:3,4 191:7 225:4,6 239:13 247:22 252:9 257:5 268:8 272:10	275:5,8 286:20 348:20 <b>evidence</b> 31:11 84:9 85:2 111:11 118:8 127:6 182:22 184:3 193:10 229:18 230:23 233:17 235:1 238:22 239:2,5 240:14 241:3,7 242:8,9,11,13 242:16,17 243:1,3,5 244:18,20 245:1,2 255:17 257:6 259:20 259:24,24 260:3,5 275:5 279:19 284:19 287:7 288:2 344:11 358:11 358:13,14,15 358:17 <b>evidently</b> 370:24 <b>evzio</b> 49:7,15 <b>exact</b> 37:9,24 172:1 <b>exactly</b> 26:4 104:15 165:6 171:5 335:23 <b>exam</b> 62:21 <b>examination</b> 9:19 333:13 339:12 341:8 359:23 364:4 367:2,19 <b>examinations</b> 247:11 268:16 <b>examine</b> 22:7 84:9 111:11,14 214:10 250:16 252:4 291:22 <b>examined</b> 22:3 84:24 160:21 176:6 269:10 314:22
---	--	---	--	---

<b>examines</b> 363:14	132:18 138:8,8 151:24 184:19	247:2,16 248:13,23,24	45:3,7 46:2,17 48:23 49:9	214:24 215:10 219:16 222:10
<b>examining</b> 92:22 113:3	189:7 251:12 260:24 295:11	249:8,16 251:15 252:6,7	50:3,7 57:20 58:1,3,6,17	222:15 223:2 223:15 224:3
<b>example</b> 70:11	328:10 363:18	256:13 258:6,8 258:13 260:16	59:9,15 60:20 60:24 61:9	225:10,12 229:19 231:22
127:21 135:13	<b>exempt</b> 98:17	263:8,10 269:15,17	78:20,21 79:9 79:12,14,18	232:2 246:22 249:21 250:3
142:13 150:15	<b>exercise</b> 20:10	271:14 275:22 275:23 290:16	88:4 92:5 156:2 158:2,20	251:2 252:14 253:8,9 256:3
303:21 304:24	362:13	290:19 295:1,6 346:7,9,12,15	159:21 161:5 161:10 162:4	277:6 284:20 285:12 286:21
318:3 330:15	<b>exhibit</b> 11:9,10	348:5 349:12 349:14,24	180:21 213:21 213:24 214:1,3	301:2 312:15 313:10 319:22
368:19 369:10	11:24 13:4,8	351:5,8,9,11 351:13,18	268:22 274:20 288:23 289:10	322:3,17 323:17 324:9
<b>exceed</b> 209:18	13:22 18:18,19	352:4,8,9 353:21 354:3	338:24 <b>expertise</b> 30:7	325:22 326:6 356:15,20
209:22 210:5	18:21 19:4,22	364:20,21,24 366:9 367:23	45:22 61:19 62:4	361:14,18 364:8
328:19	20:3 21:15,16	368:7,9 <b>exhibits</b> 33:17	<b>experts</b> 64:16 79:1 85:9	<b>exposures</b> 357:8 <b>express</b> 41:21
<b>exceeded</b> 280:2	21:19,23 22:5	74:22 223:20 368:13 370:1	108:10 161:11 207:1,12,15,24	334:12 <b>expressed</b> 332:9
329:7 330:9	22:19,24 23:8	<b>exist</b> 285:8 <b>expect</b> 61:15	268:19,24 303:11 310:13	334:5 362:2 <b>expressing</b> 33:8
<b>exceeds</b> 330:19	23:13,18,19,22	219:9 228:10 228:24 341:2	<b>expires</b> 375:20 <b>explain</b> 82:10	39:13 106:2,10 109:1 208:13
<b>excellent</b> 65:3	24:1,15 25:20	<b>expectation</b> 357:5	225:2 308:18 368:7	322:16,23 327:14 331:23
<b>exceptionally</b> 241:2	25:21,24 26:10	<b>expected</b> 363:19 <b>experience</b>	<b>explains</b> 86:10 <b>exposed</b> 107:12	336:7 <b>extended</b> 356:10
<b>excerpts</b> 6:18,20	26:11,14,16,19	52:22 53:17,21 53:24 55:12	107:23 130:4 225:22 233:6	<b>extensive</b> 261:10 <b>extent</b> 61:18
6:21,23 7:5	26:21,23 27:3	70:23 71:7 <b>experimental</b>	233:21 266:6 272:16 287:23	181:4 299:18 334:15,18
248:23 249:2	28:9 29:6,8,11	238:24 239:4,6 240:16 241:5,8	315:23 <b>exposure</b> 107:18	<b>extract</b> 165:21 166:3 168:7,12
258:8 263:11	29:13,24 30:20	242:10,13,18 243:4 244:21	108:13 121:18 124:21 129:9	168:18 171:21 172:9 228:19
269:17 275:21	34:17 36:11	257:6 260:4 275:7	129:13,21 130:7,22 132:8	229:2,4,19 289:20
<b>exchange</b>	37:11 41:15	<b>expert</b> 10:1 19:7 24:2 30:13,15	134:9 182:16 189:1 204:15	<b>extracts</b> 6:7 135:14 164:21
115:15 117:3	64:2 85:22,24	33:15 36:22 38:13 41:24	204:16,19 208:14,24	167:23 <b>extraordinarily</b>
117:18,23	89:6,7,18	42:3 44:24	209:12 210:6	277:23
118:4,12,15	96:16,19			
123:5,19 288:6	100:17,19			
<b>exchanges</b> 184:1	101:8 103:21			
<b>excipient</b> 4:20	103:22 104:1,7			
23:2	120:9,11 121:9			
<b>excipients</b> 21:22	121:13 155:8			
22:1 187:2	155:10 157:21			
<b>excluded</b> 156:1	157:23,24			
<b>excluding</b>	158:4,9 160:24			
104:14	163:4,5 164:12			
<b>excretion</b>	167:11,13,18			
268:11	167:22 168:11			
<b>excuse</b> 49:10	170:9 171:9,11			
58:19 59:1	172:19 173:7			
69:1 84:21	173:17,19			
87:21 92:10,15	174:4 177:15			
93:17 94:8	177:17 178:9			
102:23 115:4	179:3 180:6			
122:19 123:18	203:3,4,6,12			
125:7 126:5	239:9,12 240:3			
	245:24 246:3,7			

<b>exudation</b> 171:16,20 <b>eye</b> 110:12 231:11,12 307:14 311:10 311:17 313:3,7 313:9,10,17,23 314:6 <b>eyes</b> 227:11 304:4,7 314:10	240:21 <b>fall</b> 239:8 242:2 <b>falls</b> 96:24 97:8 <b>falsification</b> 86:13 88:5,20 <b>familiar</b> 10:12 23:21 41:1 89:3 119:18,19 120:2,21 121:23 122:24 125:6,12 155:5 155:17 163:7 177:11 202:8 211:3 224:1 237:12 238:7 239:20 <b>fashion</b> 344:5,7 <b>faster</b> 166:9 <b>fax</b> 1:23 <b>fda</b> 4:19 6:9 21:24 22:12 58:2 59:19,20 60:6,12,13,16 60:24 61:4,9 61:19 62:4 65:17 68:9,13 68:14,18 71:13 109:22 111:3 139:4 146:23 150:17 154:19 169:11,12,20 174:5,8 180:15 180:24 187:4 301:17 318:2 331:5 332:1,13 357:1 369:2 <b>fdaapproved</b> 331:10,12 <b>fdas</b> 22:6 122:24 140:4 173:20 <b>february</b> 46:22 <b>federal</b> 1:18 87:16 89:13 99:19 149:11 150:23 151:4,9 151:17 152:7 154:3,13	340:11 <b>feed</b> 280:1 <b>feel</b> 71:3 81:5 120:16 160:2 166:14 234:10 258:21 265:20 316:8,10 317:4 317:16 327:21 366:5 <b>female</b> 117:14 184:5 207:3 217:9 218:3 272:13 277:12 277:14,15 278:4,8,11,15 <b>females</b> 227:12 265:10,10 272:4 277:12 279:16,19 280:5,6 318:4 <b>femtograms</b> 350:14 <b>ferguson</b> 3:3 4:6 333:3,15,17 335:12 337:13 339:3 363:1,4 367:4,15 371:7 <b>fertility</b> 117:14 <b>ffdca</b> 99:1,11 <b>fibroblasts</b> 285:20 <b>field</b> 145:8 146:8 146:21 194:10 362:10 <b>fields</b> 161:11 <b>figure</b> 22:22 110:22 <b>file</b> 33:14 <b>files</b> 366:15 <b>filling</b> 71:2 <b>film</b> 65:21,22 69:8 220:4 331:20 356:4 356:11 <b>final</b> 41:16 <b>finally</b> 23:15 <b>find</b> 73:18 85:21	109:12 182:10 230:4 269:12 301:7 304:22 314:23 320:5 <b>finding</b> 284:10 <b>findings</b> 250:15 254:11 <b>fine</b> 18:3 184:21 224:23 <b>finish</b> 49:14 72:10,15 92:18 93:18 94:9,11 94:13 107:5 117:8 152:1,3 152:7 184:22 189:18,20 205:18 208:5 231:6 232:18 235:17 251:21 251:24 260:22 273:15,20,21 273:24 316:13 <b>finished</b> 20:12 49:11 78:18 92:18,19 118:2 119:5,9 122:20 184:20,21 229:16 235:24 260:24 302:11 <b>finishing</b> 142:10 <b>firm</b> 2:2 13:17 13:18 42:9,11 42:12,17,22 <b>first</b> 9:16 13:6 13:22 18:11,23 27:19 36:21 37:11,19,20,24 38:2,17 45:2,6 53:8 96:22 98:15 100:6 101:7 105:6 121:8,13 126:17 144:11 147:18 151:16 174:4 177:8,20 178:12 179:4 180:12 218:8	240:12 243:23 244:2 248:24 259:6 260:19 300:4 323:22 335:1 343:10 350:3 351:15 368:19 <b>five</b> 45:13 46:19 46:19 101:17 189:12,18 201:14 202:4 <b>fixatives</b> 177:24 179:7 <b>flavonoids</b> 64:3 <b>flavor</b> 51:24 52:1,1 65:2 169:7 229:7 342:10 <b>flavorants</b> 341:19 <b>flavored</b> 64:15 <b>flavoring</b> 6:10 64:22 169:15 174:11 219:5 228:18 <b>flavorings</b> 169:14 <b>flavors</b> 52:23 64:3,6,12 65:4 304:19 342:2 <b>flip</b> 79:10 <b>flipped</b> 79:6 <b>flom</b> 2:18 <b>floor</b> 2:14 <b>flotation</b> 39:8,14 336:1,7,9,14 337:2,8 362:19 362:21 367:8 367:12 <b>flower</b> 2:14 <b>flw</b> 1:6 <b>fly</b> 365:16 <b>focus</b> 342:3 <b>folks</b> 70:16 175:11 199:1 289:8 291:18 <b>follow</b> 10:13
---	--	---	---	---

150:7 363:19 <b>followed</b> 194:15 194:16 <b>following</b> 119:7 272:24 <b>follows</b> 9:17 <b>followup</b> 340:8 <b>food</b> 6:10 97:14 110:1,3 112:19 118:7 127:21 149:13 151:13 153:4 154:9 173:22 174:5,6 174:9 180:1,13 180:14 187:5 212:2 287:6,16 288:11 301:17 327:9 <b>foods</b> 153:5 342:5,6 <b>foregoing</b> 372:16 375:5 <b>foreign</b> 207:5 208:9 <b>forever</b> 152:5 <b>forget</b> 277:22 <b>forgot</b> 188:14 <b>form</b> 21:2 28:13 32:8 33:3 39:17 48:19 50:11 53:20 56:3,9 58:7,24 60:7 61:3,12 61:21 62:6 67:6,13 68:11 69:2 73:12 77:24 81:17 82:7 83:8 84:2 84:13,22 85:2 85:17 86:7 87:2,22 88:8 90:17 91:9,17 92:11 93:12 94:21 96:14 98:7,21 99:4 99:16 100:8 101:10,23	103:12 104:18 105:21 106:6 106:19 107:13 108:1 111:6 112:14 113:10 113:15,22 114:13 115:5 119:21 121:20 122:5,12 123:13,19 126:6 127:4,10 127:17 128:15 128:23 131:7 131:16 132:19 133:9 134:14 136:6,21 141:5 141:12 142:3 142:20 143:2 143:15 145:9 146:9,22 149:2 149:9 150:5 154:15 155:14 156:24 159:10 159:24 161:14 165:22 167:4 168:21 169:17 170:22 171:22 172:10,14 175:21 176:5 176:14 181:3 181:19 182:4 183:2 186:2,15 187:21 188:6 188:21 190:20 191:11,18 193:7 194:4 195:1,24 196:11,16 197:1 199:9 200:17 201:2 201:17,23 202:5,21 204:5 206:23 207:10 208:10,17 212:19 214:7 215:2,12,24 216:12 217:18	217:21 219:11 221:8,12 222:11,18 223:5,18 224:4 225:18 226:1 226:24 227:7 228:13 229:3 229:22 232:4 233:9,19 234:8 234:18 235:15 238:3 240:19 244:22 246:9 247:3 250:5 251:5 252:16 252:24 253:11 253:21 255:2 256:6 259:11 260:13 262:21 263:20 264:18 267:7 268:3 269:7 270:7,14 271:9 277:1,20 282:8,18 283:15 284:5 284:12 285:14 286:14,24 288:19 291:14 294:6 295:19 297:11,22 298:9,23 300:3 300:14 301:4 302:1,13,23 303:5,12 304:14 306:8 307:5,16 308:1 308:16 309:8 309:17 310:20 312:23 313:20 315:9 316:5 317:2 320:18 321:11 322:6 322:21 324:12 326:9,19 327:19 328:21 329:9 330:14 331:14 332:4 332:21 335:10	337:10 342:24 345:11 347:16 348:8,22 351:3 353:17 359:1 359:19 360:23 363:1,12 370:18 375:9 <b>formal</b> 51:12 56:1,8,13,20 56:23 62:17 <b>formation</b> 323:10,14 <b>formed</b> 90:24 371:2 <b>former</b> 51:11 220:4 <b>formerly</b> 33:1 334:8 <b>formers</b> 331:20 356:5 <b>forming</b> 81:1 83:16 343:22 <b>formula</b> 345:17 349:19 354:5 <b>formulas</b> 345:9 <b>formulate</b> 52:5 112:3 131:4 205:15 <b>formulated</b> 52:18 65:16 67:23 <b>formulating</b> 40:10 362:15 <b>formulation</b> 30:10,16 31:20 45:24 66:11 151:12 230:8 352:14 <b>formulator</b> 66:9 113:1 <b>forth</b> 67:2 71:3 74:14 84:6 86:4 93:6 110:13,16 121:10 127:15 139:19 155:21 234:13 286:1	290:19 300:18 308:24 <b>forty</b> 2:14 <b>found</b> 31:12 74:19 114:14 114:20,22 116:2 126:19 126:22 127:18 163:1 183:22 212:11 213:7 218:14 220:9 230:8 246:5 248:10,19 255:8 262:3 265:4 270:24 271:11,22 281:11,13 286:7 287:7 299:10,18 307:19 308:2 314:19,24 315:4,7 320:10 320:13 368:10 368:22 369:1 <b>foundation</b> 300:15 347:17 348:9 359:2,19 360:24 370:19 <b>foundational</b> 370:20 <b>four</b> 10:8 45:13 45:14 99:10 101:17 122:2 149:10,24 150:11 197:9 236:4 237:14 256:18 350:3 <b>fourpage</b> 26:22 <b>fourth</b> 3:13 47:9 303:24 350:6 <b>fragrance</b> 7:11 7:12,14 18:24 19:10,17 22:16 31:6,10 32:5 32:14 34:9 35:17,21 38:14 48:15,18 50:9
---	--	---	---	--



50:13 52:10,11 52:14 63:10,22 64:7,18 65:6 67:19 73:16 75:18,21 81:10 81:19 95:15 99:1,11 105:7 105:13,20 106:3,11,17,21 107:11,24 108:8,14 109:8 110:24 111:1,5 112:11 114:10 114:23 115:10 116:10,11 124:5,10,16 126:13 127:3 127:14 133:6 134:18 135:4 135:19,23 136:8,19 137:3 137:8,16 138:3 139:2,13 141:3 141:10,18,23 141:24 142:6 142:17,19,24 143:11,18,23 144:1,19,23 145:17 147:2 147:13 149:7 151:8 153:23 154:11 155:1 155:24 156:4,7 156:11,22 157:3,7,8,15 158:10 160:21 161:18 162:24 163:16 164:5 167:1 169:1,7 169:16,21 172:7 174:18 174:24 175:3,6 175:17 176:1 176:13 178:22 179:14 185:20 185:24 188:8 188:11 190:4,6	190:9,16 192:10,17,22 193:3,14 194:21 195:11 196:9,23 199:5 199:19,23 200:9 206:18 212:5,10 214:24 215:5 215:10,18 216:8 217:14 219:5 220:4,6 226:22 228:9 237:14 243:19 243:23 244:2 296:12 299:7 299:12 301:10 304:16,18 308:7 309:14 315:16 321:19 328:4 330:2,21 331:16 334:6 334:14,20 335:3,18 342:11,14,18 342:21 343:12 345:9,15,16 346:23 347:5 349:4 350:4,19 351:2 352:10 355:8,17 356:4 356:6,13,16 369:3 <b>fragranced</b> 5:14 <b>fragrances</b> 52:16,16,23 63:14 64:7 112:17 135:11 156:15,17 179:18 186:14 187:19 191:7 195:23 199:21 200:20 214:5 314:5 331:13 341:18 342:2 343:3 345:18 <b>fragrant</b> 178:1	179:7,16 <b>framework</b> 31:17 <b>francisco</b> 48:3 57:7 <b>frankly</b> 31:19 277:23 <b>free</b> 81:5 88:4 120:16 160:2 166:14 183:17 258:21 <b>frequency</b> 234:1 357:3 <b>front</b> 12:10 104:1,3 148:1 269:24 <b>fruit</b> 218:15 219:10,17 288:22 289:2 289:16,17,18 <b>fruits</b> 146:15 218:20 <b>full</b> 100:2,4 101:4 102:11 102:17 122:3 131:6,14 132:6 177:22 187:6 200:13 251:16 276:8 <b>fully</b> 84:5 152:12 <b>function</b> 214:14 <b>funding</b> 43:7 <b>fungal</b> 205:8 <b>further</b> 333:1 364:1,4,16 365:19 367:2 367:19 371:3,5 371:7 <b>future</b> 366:17  <b>G</b> <b>galaxolide</b> 352:24 353:1,3 <b>galloway</b> 115:17 115:19 117:24 118:6,13	230:21 288:9 <b>gammaundec...</b> 369:18 <b>gather</b> 85:1 92:20 109:16 111:21,24 112:4 <b>gathered</b> 110:6 194:6 <b>gavage</b> 256:18 318:4 <b>gel</b> 70:12 <b>general</b> 10:13 80:18,21 132:4 132:11 214:9 215:3 217:1,3 314:8 338:14 370:5,17 <b>generalities</b> 130:9 <b>generalization</b> 188:7 314:13 <b>generally</b> 23:7 64:5 84:24 111:7 120:21 121:23 122:18 129:5 133:15 138:13 154:6 163:7 177:11 206:9 214:6 227:8 229:5 250:3 253:18 254:9 326:1 361:18 362:9 <b>generallyacce...</b> 187:9 <b>generate</b> 15:5 24:4 217:5 <b>generated</b> 14:5 14:9,24 15:2 274:18 <b>generating</b> 12:14 <b>generation</b> 29:15 <b>generic</b> 46:9,10 <b>genital</b> 81:8,16	<b>genotoxic</b> 117:17 118:9 124:16,18 125:20 126:14 126:23 127:13 127:18 131:22 132:1,10 221:14,20 230:13 255:9 287:11 357:19 357:20 <b>genotoxicity</b> 6:12 127:24 176:20 204:3 230:6 292:23 <b>genotoxins</b> 124:18 204:7 <b>geoffrey</b> 2:18,20 <b>getting</b> 48:1 68:1 207:5 316:9 <b>ghs</b> 6:15 202:11 202:13,17,22 203:6,9 296:17 296:18,20 297:3,18 298:3 298:5 299:2,14 300:1,11 304:1 304:10,12 305:3,8,13 360:1 <b>give</b> 16:21 17:1 17:6 18:3 25:12 27:13 59:1 73:3 166:11 171:16 189:11 191:8 226:5 233:20 263:13 267:6 268:2 355:3 366:18 <b>given</b> 10:4 11:6 17:21 19:13 38:21 45:11,12 75:7 109:7 110:19 124:9 124:12 126:12
--	--	---	---	--



142:9 144:10 151:19 152:24 171:6 248:22 323:18 328:23 331:1 372:6 375:7 <b>gives</b> 174:5 <b>giving</b> 89:20 90:15 91:7 93:10 324:17 343:6 <b>glanced</b> 295:4 <b>gland</b> 280:11 <b>glider</b> 71:1 <b>globally</b> 202:9 <b>glue</b> 220:3 <b>glued</b> 328:1 <b>glycol</b> 140:21 <b>go</b> 16:4,20 24:5 25:6 34:15 39:22 40:3 55:8 64:17 72:6 77:18 85:19 94:16 97:4,19,20 98:12,14,23 99:7,22 100:1 102:10 109:20 111:2 112:6 119:11 120:8 126:9 131:13 139:15 149:3 150:20 153:1 154:1 164:15 166:5 168:11 169:22 173:4 174:3 183:3 187:9 203:11 204:8 205:18 217:11 220:6,7 250:7 260:18 265:22 268:15 271:14 277:24 288:1,5,10 289:14 294:24 303:22 305:21 306:1 307:7	311:4 313:8 314:23 316:13 321:1,5 327:8 328:5 333:3 340:21 342:8 353:22 356:13 365:16 366:3 <b>gods</b> 205:12 <b>goes</b> 248:20 258:14 328:4 <b>going</b> 10:13 13:9 25:9 26:5 49:23 67:16 90:20 93:20 96:18 104:22 112:5 114:1 115:12 131:6 139:15 151:15 152:15 162:9 166:7,16 180:19 181:11 181:22 183:13 189:7,8,17,21 192:1 198:11 205:5 224:10 227:9,15 231:8 231:14,16 234:13 235:15 237:5 245:18 246:10 247:7 251:6,7 254:19 258:10 262:14 263:13 265:15 279:15 281:19 283:4 294:16 308:17 333:6 341:4 356:13 356:15 359:11 371:11 <b>golkow</b> 1:22,23 <b>good</b> 30:18 72:5 90:10 127:22 132:22 219:13 314:12 316:7 <b>google</b> 109:11 111:2 305:19 <b>googled</b> 193:24	<b>gordon</b> 3:2 <b>gordonrees</b> 3:5 <b>gotten</b> 96:7 <b>government</b> 89:14 152:21 344:1 <b>governmental</b> 85:18 105:9 144:15 <b>governments</b> 154:1 <b>gracious</b> 189:10 <b>grad</b> 56:4 <b>grade</b> 272:17 <b>graduate</b> 56:19 56:21 77:8 338:15 <b>granting</b> 174:9 <b>graslisted</b> 154:6 <b>great</b> 129:9 341:6 <b>greater</b> 122:22 203:20,20 272:18 279:20 316:21 <b>group</b> 198:20 238:11,15,17 239:8 240:4,6 240:13,23 241:2,21 242:2 242:4,7 243:8 243:12,15,20 245:9 259:3,7 259:13,23 260:9,18 261:23 263:5,7 264:21 266:22 267:5 268:22 269:3,4 273:3 274:21 277:3 280:2 302:6 363:13 <b>grouped</b> 163:11 <b>groups</b> 64:24 147:19 247:18 301:18 344:3 <b>grunenthal</b>	45:16,17,18 46:8,9 <b>guess</b> 188:20 213:11 222:20 349:8 <b>guidance</b> 4:19 21:19,24 22:12 <b>guidances</b> 357:1 <b>guinea</b> 274:15 <b>gulati</b> 118:16 <b>gums</b> 135:13 <b>guy</b> 64:19 <b>gynecological</b> 233:23 <hr/> <b>H</b> <hr/> <b>h</b> 4:12 5:2 6:2 7:2 <b>h315</b> 304:1 <b>h317</b> 304:2 <b>h350</b> 297:7 <b>h350i</b> 297:8 <b>h351</b> 297:9 <b>hair</b> 325:19,19 <b>half</b> 130:12 233:3 239:1 241:17 <b>hamster</b> 114:18 115:16 116:3 116:16 117:11 117:18,23 118:5,13,15,19 119:1,4 183:23 218:1 220:10 220:22 221:24 230:16,20 285:17 288:7 <b>hand</b> 89:5 96:18 325:18 <b>handed</b> 351:11 <b>handing</b> 27:15 <b>handle</b> 132:22 219:10 <b>handling</b> 219:17 <b>hang</b> 368:3 <b>happen</b> 112:17 283:20	<b>happened</b> 41:11 <b>happy</b> 26:2 144:9 173:3 368:4 <b>hard</b> 25:12 344:1 349:9 <b>harm</b> 144:1 357:22 <b>harmful</b> 107:23 211:14 358:2 <b>harmonized</b> 202:9 <b>hasnt</b> 222:23 331:1 <b>havent</b> 14:12 17:22 67:7,7 89:12 108:24 120:13,15,18 176:4,6 191:3 191:20,20 198:15 235:23 271:11 355:8 <b>hazard</b> 121:16 123:23 124:1 131:4 202:18 293:4 296:16 <b>hazardous</b> 99:20 128:21 129:8 <b>headache</b> 215:1 <b>headaches</b> 215:11 <b>health</b> 71:16,19 75:8,8 119:20 180:16 200:1 200:14 204:1 237:1 279:6 284:18 290:1 290:13 292:7 311:1 <b>healthy</b> 230:7 <b>hear</b> 39:19 72:19 73:2,4,5 165:12 270:17 280:22 339:19 339:21,24 <b>heard</b> 89:10 120:5 183:5
--	---	--	---	---

340:2	<b>histiocystic</b>	252:9 253:17	358:2,11,12,15	277:2 286:1
<b>hearing</b> 35:6	277:8,11	254:6 255:5	358:18 364:10	358:6,10 359:9
60:11	<b>histiocytic</b>	258:19 261:16	<b>hydrogenated</b>	<b>iarc</b> s 268:1
<b>heath</b> 211:5	277:15 278:9	261:19 264:16	190:3,9,13	269:1
<b>hed</b> 183:10	278:15 279:16	270:4,11 271:3	220:3	<b>id</b> 12:6 16:4,19
<b>held</b> 87:19 88:1	279:18,23	271:6,11,15,19	<b>hydroquinone</b>	17:3,3 73:23
345:10	280:7,10	273:10 274:5	140:22	77:18 87:9
<b>help</b> 35:20 54:23	<b>historical</b> 209:9	276:23 282:5	<b>hyperglossary</b>	119:11 144:8
64:12 65:3	279:24 280:3	282:10,16	5:17	145:21 149:3
81:22 87:10	352:13	283:13,20	<b>hyperlink</b>	175:15 197:7
153:8 166:10	<b>history</b> 143:6	285:18 288:13	150:21	202:22 204:8
171:2 186:23	<b>hold</b> 55:22 362:5	288:15,18	<b>hyperplasia</b>	220:1 235:11
356:6	<b>holds</b> 82:1	293:4 318:14	278:8	247:10 270:8
<b>helped</b> 34:8	<b>hole</b> 227:9	359:16	<b>hyphen</b> 176:23	270:20 293:13
35:17 52:5	<b>home</b> 77:18	<b>humans</b> 6:17	<b>hypothetical</b>	297:16 314:22
205:15	<b>homogeneity</b>	115:6 183:1,6	129:1 228:14	341:12 349:6
<b>helping</b> 68:6	355:15	185:7 194:23	<hr/> <b>I</b> <hr/>	<b>ideally</b> 187:2
<b>hematopoietic</b>	<b>homogeneously</b>	195:10,23	<b>iarc</b> 6:16,18,20	<b>ideas</b> 89:19
246:24 250:2	137:19	196:4,10,18,24	6:21,23 7:5	<b>identification</b>
254:8	<b>honest</b> 85:10	197:7 199:8	195:18 198:2,8	121:17
<b>hepatoblastoma</b>	<b>hope</b> 367:5	213:1 217:20	198:20 236:5	<b>identified</b> 19:16
277:10	<b>hopefully</b>	218:4 222:5,23	236:17 237:7	36:4 45:16
<b>hepatocellular</b>	250:23	224:2 233:18	237:17 238:6,8	77:2 110:5
184:6 265:6,10	<b>hormonal</b>	234:9,12,15,17	239:13,24	123:22 126:15
265:17 271:1	233:24	234:20 235:2	241:21 242:4	134:19 136:20
277:8	<b>hotel</b> 1:18	238:12,16,19	243:9,21,24	137:4 167:2
<b>hereto</b> 1:19	<b>hour</b> 34:22 35:5	238:23 239:3,7	244:3,8,14	174:23 197:10
<b>hes</b> 152:11 160:2	35:10 189:8,22	239:14 240:6	245:5 246:3,7	216:9 217:15
183:13,17	<b>hourly</b> 35:4	240:10,15	246:12,13	236:5,17,22,24
227:21 251:12	<b>hours</b> 17:17	241:4,9 242:6	247:1,11,16	237:14,23
251:13 273:12	18:2,5 152:16	242:8,12,17,24	248:5,8,13	257:24 259:18
365:11,11	230:16 286:5	243:2,10,13,16	249:24 253:18	271:7 309:15
<b>hey</b> 189:6	<b>houses</b> 64:7	244:19 245:2,7	254:6 255:15	311:9 313:19
<b>hi</b> 339:15	<b>human</b> 82:20	245:10 251:3	255:23 256:11	314:6,16
<b>high</b> 128:22	115:1,2 118:20	252:15 255:12	257:4,24 258:9	322:14 329:3
284:20	119:19 128:10	259:10 260:1,3	259:2,17,19,22	334:20
<b>higher</b> 82:22	128:14 180:16	260:12 261:23	260:10 261:15	<b>identify</b> 19:12
106:23 200:7	184:10,16	264:22 269:6	261:21 263:5	26:13 34:8
216:23 217:8	185:5 195:15	274:23 275:10	263:11 264:20	35:17,20 65:3
219:9 228:11	197:18,23	276:18,21	266:21 267:5	109:14 110:18
228:24 278:5	200:13 204:1	283:24 284:4	268:5,16,18,24	123:24 131:3
300:21	217:23 222:7	284:11,19	269:18 271:7	139:14 144:19
<b>highly</b> 86:11	222:17 230:6,9	285:6,13,23	271:17 272:10	148:23 150:24
280:8 293:2,21	235:3,19,23	287:18 307:15	274:3,20	154:24 156:16
293:23	239:13 246:21	307:20 317:1	275:13,19,21	162:10 208:22
<b>hilton</b> 1:18	249:16,20	317:20,22,23	276:14,17	248:13 298:4
<b>hired</b> 153:7	250:1 251:1	317:23 320:16		301:6 307:23

308:15 311:16 312:11 323:2 325:6 326:17 327:16 352:8 <b>identifying</b> 109:8 <b>ifra</b> 5:22 6:5,6,8 109:20 111:3 149:7,11 153:3 156:19,21,22 157:2,10,11,14 158:2,10,12,17 158:21 159:2,8 159:22 160:7 160:13,14 161:3,23 162:5 162:23 163:2 163:10 164:7 164:24 165:17 167:3,19,23 168:6,10 169:23 171:12 172:18 175:9 175:11,13 185:24 186:11 190:13,17 191:16,16 208:24 209:11 209:22 210:4,7 301:19 311:10 311:21 312:12 323:3 325:5,7 325:10 326:15 326:23 327:4,8 328:19 329:4,7 344:3 <b>ifras</b> 209:6 <b>ignore</b> 182:15 235:5 255:6 <b>iid</b> 140:19 332:18 <b>ill</b> 14:12,16 15:15 16:23 17:24 20:8 21:3 24:24 32:18 36:9 48:1 73:3	87:10 95:3 152:8 172:11 173:2 207:14 218:17 242:22 249:7 255:24 263:22 264:2 329:15 336:16 347:19,19 349:10 359:4 366:8 368:4 <b>ilpi</b> 103:24 <b>im</b> 26:4 27:15 29:9 32:9,21 37:8,10 40:5 48:5 49:3,14 49:23 58:8 59:10 66:22 74:7 75:19 84:23 86:19 92:1,2 93:5 95:14,17 96:18 101:6,14 102:11,13 112:15 113:13 113:17 114:8 115:12 116:4 116:21,24 120:5 121:6 122:23 126:18 126:21 129:14 133:12 138:15 139:15 141:13 149:19 150:6,6 150:24 153:7 153:15 159:11 162:9 166:16 170:7,15 171:4 172:5,5 175:1 175:22 178:5 178:24 179:23 180:3 185:8 186:4 191:1 193:18 195:20 198:7,11 200:2 210:10 223:10 224:10,12,13 224:19,21	231:6,7 232:16 235:8,10,14 236:7 237:5 242:19,22 246:10 247:1,7 248:9,12 249:12,15 251:6,7,9 254:19 256:12 258:2,10 260:15 261:3,4 261:5 263:13 265:15 266:15 266:15 267:21 270:22 271:10 279:15 281:17 281:19 282:20 284:6 287:9 290:4,7 295:21 296:22 300:19 308:17 311:13 319:11,14 321:3 322:22 323:11 324:24 328:10 335:23 336:16,20 341:4 346:14 352:7 359:8,11 365:3 366:2,17 369:11 <b>imagine</b> 112:7 <b>imery</b> 74:17 <b>imerys</b> 3:10 74:17 75:3 333:18,21 362:19 <b>immaterial</b> 357:19 371:1 <b>immediately</b> 37:23 <b>immune</b> 300:18 <b>impact</b> 36:8 96:5 130:19,23 143:24 208:9 354:15 370:13 <b>impaired</b> 117:14 <b>impartial</b> 83:22	<b>imperative</b> 373:14 <b>implicated</b> 197:13 255:8 <b>important</b> 83:20 83:24 86:11,20 87:14 88:19 123:10 131:13 214:17 222:22 223:3,16 231:23 241:2 291:16 302:3 310:9 330:12 350:22 <b>importantly</b> 124:14 355:1 <b>inactive</b> 22:2,7 23:11 31:21 109:23 139:5 140:5,8 331:5 331:17 332:1 332:14 <b>inadequate</b> 238:22,23 239:3 240:15 240:16 241:4 242:11,16 243:1 245:1 260:1,2,4 358:14 <b>inappropriate</b> 93:2 144:8 <b>inaudible</b> 149:17 <b>incidence</b> 256:4 256:23 265:11 273:4 277:7,12 279:17 280:1 <b>incidences</b> 184:6 217:8 270:24 <b>include</b> 31:14 90:14 91:14 92:7 94:18 103:9 139:10 148:15,17 150:12 198:19 199:6 224:2	324:3 326:18 344:18 347:3 362:2 363:10 <b>included</b> 76:14 92:24 135:20 147:14 175:18 175:19 176:1,2 190:17,18 194:21 195:11 299:2,19 301:10 331:9 334:7 343:17 345:1 346:17 <b>includes</b> 51:22 74:22 152:20 153:3 325:17 <b>including</b> 28:11 130:20 199:23 200:3 285:18 299:3 301:7 304:18 305:20 308:24 310:10 343:19 349:19 <b>income</b> 44:17,18 <b>incomplete</b> 84:18 158:5 228:14 251:15 252:6 <b>incorporate</b> 119:16 <b>incorporated</b> 102:21 104:8 247:20 348:16 <b>incorrect</b> 41:9 <b>increase</b> 82:5 106:5,12,18 132:2 199:7 293:2 <b>increased</b> 82:11 82:20,24 83:6 124:20 125:23 184:6 217:16 221:19 233:23 234:1,6 246:23 249:22 250:1,9 251:2 252:15 254:7 256:4,23
---	---	--	--	---

277:7,12,19 278:6,22 285:11 <b>increases</b> 182:24 184:5 300:20 361:12 <b>independent</b> 67:12,18 135:17 138:1 158:20 161:11 <b>index</b> 6:5 8:2 163:2 <b>indicate</b> 136:9 136:12,15 178:21 <b>indicated</b> 38:12 125:20 337:14 365:21 <b>indicates</b> 221:24 <b>indicative</b> 286:7 <b>indisputable</b> 308:4 <b>individual</b> 107:9 107:11,17,22 253:9 361:15 <b>individuals</b> 321:23 <b>induce</b> 230:8 <b>induced</b> 184:1 <b>induction</b> 117:17 <b>industrial</b> 57:12 <b>industry</b> 21:20 105:9 137:15 137:17 144:15 174:12 343:9 344:2 363:13 <b>industryspons...</b> 180:22 <b>inert</b> 331:18 <b>infants</b> 234:3 357:11 <b>inflamed</b> 309:4 <b>inflammation</b> 67:4,20 82:21 83:5 300:20 307:21 308:3	308:12,15,19 308:20,22 309:1,7,23 310:8 316:1,20 317:7 321:10 321:14 <b>inflammatory</b> 81:11 82:14,15 82:19 105:14 192:12 216:22 216:22 217:6 300:19 308:13 343:13 <b>info</b> 6:15 203:9 <b>information</b> 5:10 12:21 18:23 19:22 20:16 24:1 31:14,18 38:16 73:18 76:11 84:5,11,17 85:1 90:19,21 90:24 92:20,23 93:23 94:5,18 109:4,21 110:6 111:4,21,24 112:4,11,23 124:9,12 126:11 127:2,9 127:15 133:14 134:23 136:3 136:23 137:6 137:20,23 140:18 142:8 142:11 143:9 144:7 147:23 150:20 174:8 184:15 194:2,6 200:21 201:4 201:12,19,24 204:22 226:3 232:6 233:12 253:2,12 278:19 286:16 286:21 287:2 288:24 289:9 290:10 292:11	298:20 299:8 299:11,19 300:1,8 302:15 303:3 304:15 307:3 309:19 315:2,11 320:1 320:7 322:8 324:14 326:1 326:11 328:17 329:5 330:10 331:1 344:4,18 345:17 346:15 347:3,11 348:4 348:5 349:23 350:16,21,23 351:22,24 352:21 353:6 353:17,19 354:10,17,23 360:5,7,11 368:11 370:9 370:20,21 <b>infuse</b> 282:10 <b>ingestion</b> 129:17 130:4 <b>ingham</b> 346:5 <b>ingram</b> 75:15 <b>ingredient</b> 5:20 109:23 118:22 140:5,8 149:6 155:2,11 160:13 161:18 162:19 163:16 164:5,8 168:2 170:19 175:18 176:1 180:21 187:18 190:17 190:24 202:18 202:19 204:1 209:12 211:20 212:15,23 218:9 246:17 331:5,24 332:1 332:13,14 355:21 <b>ingredients</b> 5:15 7:11,12,14	22:2,8 23:11 31:21 67:24 76:19 98:2,16 99:1,11 111:1 138:6,9 139:5 141:11,24 156:1 162:16 162:20 187:3 196:23 203:24 208:23 209:21 210:4 268:21 308:14 311:9 328:18 331:8 331:18 349:4 352:11 363:15 <b>inhalation</b> 108:13 208:14 208:19 256:17 297:9 <b>inhale</b> 129:15 <b>inhibition</b> 116:20 117:3 <b>inhibitory</b> 220:11 <b>inhouse</b> 57:9 <b>initial</b> 13:10 337:15 <b>initially</b> 36:24 210:18 345:24 <b>initiated</b> 19:11 <b>injuries</b> 45:4 <b>innovator</b> 46:14 48:6 <b>insert</b> 58:24 <b>inside</b> 133:11 305:24 <b>insist</b> 26:5 <b>instance</b> 1:14 <b>instances</b> 127:20 306:18 <b>institute</b> 156:3 211:4 <b>instruction</b> 38:22 <b>instructions</b> 39:3 373:1 <b>instructs</b> 159:2	160:6 161:23 <b>insufficient</b> 288:24 352:1 354:11 <b>insulate</b> 86:12 <b>insulation</b> 86:21 86:24 88:20 <b>insult</b> 321:13 <b>insults</b> 217:4 308:21 <b>integrity</b> 5:10,11 86:5,11,20 87:13,16 88:10 88:16,19 89:4 89:11,15 <b>intellipharma...</b> 49:6 <b>intend</b> 25:12 30:22 41:20 336:14 <b>intended</b> 231:9 355:5 <b>intending</b> 335:24 <b>intense</b> 353:11 <b>intentional</b> 17:24 <b>inter</b> 49:4 <b>interacting</b> 230:24 <b>interactive</b> 102:20 104:8 <b>interesting</b> 166:5 <b>intermediate</b> 357:4 <b>international</b> 64:6 149:7 156:22 157:1,3 157:6,8 158:10 197:11 236:5 284:14 <b>internet</b> 24:23 28:15 99:23 224:9,13,15 251:10,13 <b>interrogatories</b>
--	--	---	---	--

7:9 75:15 <b>interrogatory</b> 346:22 347:8 <b>interrupt</b> 195:20 <b>intraperitoneal</b> 273:3 <b>introduction</b> 177:21 178:11 179:4,24 292:14 <b>introductory</b> 101:8 <b>invasive</b> 280:8 <b>invented</b> 51:24 <b>investor</b> 54:20 <b>invoice</b> 13:11,11 13:23,23,24,24 14:1,1,2,13 15:1,5,19,23 16:3,5 17:4,20 366:15,16 <b>invoices</b> 4:16 13:6,7,10,16 14:4,8,19,23 15:1,17 16:13 34:16 73:24 366:10,10 <b>involve</b> 225:12 <b>involved</b> 36:22 39:15 48:15,17 66:10 68:1 69:6,15,21 71:8 280:6 291:13 314:2 362:20 <b>involvement</b> 52:6 54:3 66:7 68:6 69:24 <b>involves</b> 44:10 50:9 225:10 <b>involving</b> 45:3 50:16,19 62:24 69:16 295:15 327:1 <b>ip</b> 273:2 <b>ipr</b> 49:4	<b>iref</b> 208:23 <b>irritant</b> 82:5,10 296:21 304:21 307:14 308:18 309:6 311:17 370:22 <b>irritants</b> 110:11 110:12 296:13 300:12,17 301:2,22 302:2 303:18 307:23 308:15 311:10 314:6,17,24 315:1,13 327:22 <b>irritate</b> 313:24 314:7,10,11 <b>irritates</b> 313:23 <b>irritating</b> 304:3 304:6 <b>irritation</b> 67:4 82:13,16,23 83:2 215:1,7 215:11 216:19 216:21 231:12 301:3 304:2 306:20,23 307:21 313:8 313:18 314:15 <b>isnt</b> 166:23 169:12 195:5 224:15 235:22 237:19 246:21 261:18 262:1 265:2 316:15 329:10 <b>issue</b> 15:22 85:20 88:3 159:2,8,23 160:7 161:23 204:3 367:24 <b>issued</b> 11:14 22:10 279:6 346:2 <b>issues</b> 48:17 66:20 68:19 71:13 73:8	77:16 79:16 217:24 <b>item</b> 21:12 37:19 160:4 168:13 368:19 <b>items</b> 27:10 77:10 93:15 <b>iv</b> 274:16 <b>ive</b> 14:10 36:6 43:6 49:22 52:11,16,18 61:14,22 64:13 65:16 68:12,14 68:17 71:6 72:9 77:11 78:11,17 101:12 110:5 116:22 122:23 152:13 155:19 155:22 193:8 205:1,7 210:1 219:22 223:7 229:13 235:11 273:8 302:24 313:22 316:10 317:16 320:20 327:20 329:22 329:24 342:6 351:7 366:14	370:3,10 <b>january</b> 1:11,16 9:4 15:23 48:2 53:5 68:7 372:14 <b>jdonath</b> 3:9 <b>jenkinson</b> 51:19 53:14 <b>jersey</b> 1:2 3:8 <b>job</b> 96:8 <b>johnson</b> 1:4,5,14 1:14 2:21,21 7:8,8 9:10,10 32:6,6,15,15 32:23,23 33:1 33:2 75:2,3 200:10,11 253:1,1,13,13 286:15,15 287:2,2 328:23 328:24 330:1,2 335:4,4,14,15 342:17,17 345:20,20 346:3,3 347:14 347:14,15,15 348:6,6,13,13 348:14,14,15 348:15 349:16 350:24,24 352:10 363:15 363:15 367:24 <b>johnsons</b> 7:10 7:13 328:18 334:7 345:14 346:18,24 349:16 350:1 352:10 368:1 <b>jonathan</b> 3:7 <b>journal</b> 187:7 284:13,15 327:9 <b>journals</b> 63:20 110:1 327:5 <b>js</b> 359:23 360:16 370:3,10 <b>judge</b> 349:22	<b>judgment</b> 202:1 326:12 330:18 330:24 354:11 <b>judgments</b> 330:4 <b>july</b> 38:20 53:5 <b>jump</b> 24:20,22 25:3,7,14 257:2 <b>june</b> 5:21 38:19 59:18,21 <b>juniper</b> 289:18 <b>juniperus</b> 288:22 289:1 289:16 <b>jury</b> 349:22
<b>K</b>				
<b>kaya</b> 230:12				
<b>keep</b> 36:14 43:14 63:9 72:18 152:17 166:15,18 181:11 217:22 221:13 227:8 234:13 316:8 324:16				
<b>kemble</b> 3:8				
<b>ken</b> 333:16				
<b>kenneth</b> 3:3				
<b>ketone</b> 7:7 198:21 236:24 237:5,22 290:2 290:20 291:6 291:12,13 292:12 295:9 295:10 296:4				
<b>key</b> 76:12				
<b>kferguson</b> 3:5				
<b>kidney</b> 65:21 277:16 278:3,4 278:6,13 280:11				
<b>kig</b> 272:20				
<b>kilos</b> 355:12				
<b>kind</b> 79:6 152:22 222:4				



253:14 286:17 302:17 316:8 352:18 <b>kinds</b> 231:10 <b>kinetics</b> 214:13 <b>klevorn</b> 2:8 <b>klimisch</b> 224:20 225:4 <b>klotsch</b> 171:17 172:22 <b>knew</b> 279:13 <b>know</b> 25:8 36:16 38:3 49:21 55:6 63:14 64:5,21 65:4 67:1 70:7,11 74:12,16 76:18 77:10 78:12 88:10 91:21 93:24 96:7 103:13 107:10 110:4,14,19 111:8,17 114:16 124:9 124:14 127:23 128:16 129:6 129:15 134:23 136:22 137:5 141:2,6,9,17 141:22 142:4 142:16,23 143:17,21 144:3 146:15 147:16 149:13 153:7 155:15 155:21 157:9 165:20 168:16 168:22 170:18 170:23 181:10 182:10,13 183:11,19 185:8 187:5 188:14 191:2 193:11 194:12 195:16,19 199:11 205:21 205:24 208:7	208:11 209:6 210:16 212:12 213:5,10,12,14 213:18 214:8 215:4,13,19 218:16,18,21 219:17,20,22 225:14,21 226:11,15 227:1 229:7,9 229:11 230:11 231:12 232:15 232:23 247:12 247:14,23 248:1,3 252:20 253:8 262:15 264:4,19 266:5 267:11 268:14 269:11 272:15 276:5 278:24 281:8,18 284:2 286:10 287:17 287:21 289:6,9 289:12 293:24 299:13,16 300:4,16 301:2 301:8,18,19,19 302:3 304:20 304:22,23 305:3,17,19 306:3,17,19 311:4 312:18 318:1,4 319:21 323:17 325:14 325:22 326:10 326:22 327:3,5 327:22 328:11 328:16,22 330:5,17 331:15,15 333:21 337:18 338:11,23 343:8 344:4 349:6,9 350:12 352:23 353:3 354:8 355:3,4 355:10,20,21	356:18,19,20 356:21,21 357:18 358:5 368:2 370:21 <b>knowledge</b> 112:9 169:18 297:18 314:8 316:6 325:3 <b>known</b> 32:1 51:19 109:18 120:4 197:13 204:9 212:13 262:16 348:15 <b>kocaoglu</b> 230:12 <b>kotkoskie</b> 23:4 <b>kpoviessi</b> 116:6 117:21 <hr/> <b>L</b> <hr/> <b>labeled</b> 203:9 348:12 350:5,6 <b>labeling</b> 202:10 203:7 <b>labor</b> 205:6 <b>laboratories</b> 43:4 46:13 205:20 <b>lack</b> 300:15 <b>land</b> 129:1 356:14 <b>landed</b> 220:17 <b>largely</b> 96:24 97:7 <b>larger</b> 250:14 <b>largest</b> 51:21 <b>lastly</b> 356:18 357:10,18 <b>law</b> 2:2 <b>lawyer</b> 349:16 <b>lawyers</b> 376:1 <b>lead</b> 222:15 307:21 <b>learn</b> 49:24 346:16 <b>learning</b> 102:20 104:8 <b>leave</b> 108:9	181:7 <b>left</b> 177:21 180:10,11 181:4,7,10,13 355:13 <b>legal</b> 44:10,19 59:15,17 <b>legions</b> 280:10 <b>legitimate</b> 245:17 <b>leigh</b> 2:3,5 <b>lemon</b> 185:18 186:7 <b>lemons</b> 218:19 <b>lengthy</b> 268:5 <b>letter</b> 38:1 <b>leukemia</b> 277:9 277:13 278:4,5 <b>level</b> 56:20,21 107:17 160:22 161:19 165:1,7 168:16 312:12 312:14 320:4 353:2 <b>levels</b> 82:20 107:23 160:19 301:20,22 311:11,22 325:11 <b>lewis</b> 286:3 <b>lhg</b> 1:6 <b>liability</b> 1:6 45:8 <b>liban</b> 117:16 <b>lift</b> 90:13 92:5 93:8 94:17 103:8 <b>lifted</b> 101:3 <b>liked</b> 74:7 <b>likelihood</b> 306:20 <b>likes</b> 353:23 <b>limit</b> 113:14 164:8 165:6,16 208:24 210:6 234:15 237:7 <b>limitation</b> 209:19	<b>limited</b> 32:4,13 61:4 163:20 165:3,11 209:12 238:23 240:16 242:8 244:18 250:18 260:2 275:5 358:11 <b>limits</b> 203:13 <b>limonene</b> 195:18 218:10,12 <b>limonum</b> 185:15 185:17 186:7 186:10 <b>line</b> 8:6,9,12,15 164:20 358:3 370:7 374:4 376:2 <b>lines</b> 285:22 <b>link</b> 116:10 232:13 303:24 308:2,4 344:24 <b>linked</b> 217:8 <b>linking</b> 261:19 264:16 270:4 270:12 271:7 276:23 277:18 <b>links</b> 28:15 114:10,23 344:19 <b>list</b> 6:11 28:22 29:4,14 31:11 36:5 74:15,23 74:24 75:18,20 76:15,21 77:3 77:22,23 78:13 109:7 110:24 111:4 124:1 136:8 141:2,10 141:22,24 142:5,16,18,23 143:22 147:2,8 148:6,7 149:5 151:8 156:19 160:12 162:16 169:1,13 173:22 175:13
--	--	---	--	---



175:19 176:2,7 176:19 183:7 185:19,23 186:11 190:4 190:14,18 193:5,14 218:9 226:5,7 236:10 301:1 310:14 331:5,8 332:1 332:14 345:5,6 346:22 348:18 349:4,7,7,8,15 349:23 351:12 351:18 <b>listed</b> 119:13 138:11 140:7,9 140:12,15,19 150:2 151:9 154:12,17 155:2 156:12 168:6 170:1 172:21 175:4 175:13 186:10 187:3,5 190:13 193:4 196:24 199:24 201:8 211:13,18,23 212:2 299:12 303:21 312:14 331:24 332:13 338:24 344:23 <b>listen</b> 264:11 <b>listing</b> 28:10 29:23 30:1 153:22 347:2 351:8 <b>listings</b> 299:15 <b>lists</b> 140:7 164:17,21 232:13 <b>liter</b> 230:16,17 <b>literature</b> 28:15 63:11 67:14 74:13 111:9 113:8 114:6 133:2 193:12 204:12 291:23	305:17 311:5,5 327:12 343:19 343:20 <b>litigation</b> 1:7,22 44:11 63:9 68:1 75:16 85:9 107:10 113:9 114:7 349:18 <b>little</b> 74:7 91:24 154:7 159:15 174:2 193:8 264:5 281:20 293:4 305:6 315:10 341:16 357:14 <b>live</b> 131:23 <b>livenote</b> 1:17 372:12 <b>liver</b> 271:22 278:5,14 280:5 293:2 <b>llc</b> 3:15,15 42:14 44:3 <b>llp</b> 2:8,13,18 3:2 3:7,12,17 <b>located</b> 344:18 <b>lodge</b> 125:9 <b>logical</b> 31:17 <b>lois</b> 23:4 <b>long</b> 25:16 40:3 152:14 189:17 189:23 248:20 255:4 269:22 275:17 357:4 <b>longer</b> 174:10 <b>look</b> 17:4 20:11 25:4 27:2 28:21,22,24 29:12 34:15 73:23 74:21 77:15,18 99:23 100:16,19 101:24 103:18 103:20 109:21 112:16 121:4,8 131:20 132:5	139:1,15,22 147:24 149:15 151:17 153:20 154:23 156:19 157:24 163:2 166:6,12,13 167:20 168:10 168:24 173:4,7 174:21 177:16 177:20 179:2 197:3,4 203:2 204:8 215:17 218:7 232:5 240:2 254:2 256:11 258:22 265:15,22 268:19 269:11 270:8 271:13 272:22 275:18 275:20 277:24 279:5 288:5,10 290:18 292:10 292:13 295:5 297:16 305:14 307:7 311:15 335:24 347:20 348:1 352:21 364:22 365:1,7 366:3 <b>looked</b> 29:22 36:18 49:22 63:23 77:5,9 79:3 109:24 110:3,14 111:9 139:4 151:3 154:8 169:24 205:23 216:15 232:21 268:9 273:6 292:7 297:23 299:6,7 306:4 310:15 312:5 316:3 320:3 324:1,3 326:23 360:9 369:16 <b>looking</b> 29:10 37:8,10,18	38:13 64:4 86:19 101:7,15 102:11 151:21 152:20 153:1 160:23 170:7 171:4 175:1 179:23 209:10 210:10 224:19 233:15 235:10 236:7 247:1,15 248:9 256:12 258:2 270:22 271:10 295:24 343:17 <b>looks</b> 26:1 86:8 104:19 246:14 248:17 272:19 275:24 348:10 353:23 354:4 <b>los</b> 2:15 <b>lot</b> 72:20 73:14 268:14 302:15 313:8 325:20 327:4 353:7 <b>lotion</b> 227:5 228:12 <b>lotions</b> 226:23 227:5 228:9 <b>louis</b> 3:13 51:6 53:3 346:4 347:13 <b>louisiana</b> 2:9 <b>love</b> 229:6 <b>low</b> 220:12 230:18 <b>lung</b> 213:4 262:8 265:4,5 280:6 <b>lungs</b> 314:11 <b>lymph</b> 280:12 <b>lymphatic</b> 246:24 250:2 254:7 <b>lymphocytes</b> 118:20 230:6 285:19 <b>lymphoma</b> 230:10	<b>M</b> <b>m</b> 1:16,16 2:3,18 9:5 104:23,24 105:1,4 192:2 192:3,4,7 245:19,20,21 245:23 294:17 294:18,19,22 333:7,8,9,11 335:2 371:12 371:14 <b>machine</b> 1:17 <b>maintain</b> 88:10 <b>maintained</b> 210:18 <b>maintains</b> 210:16 211:1 <b>major</b> 257:3 <b>major</b> 51:1 <b>majority</b> 90:10 348:19 <b>makers</b> 205:22 <b>makeup</b> 325:18 <b>making</b> 25:9 71:2 83:16 366:2 <b>male</b> 184:5 277:11,13,14 278:2,14,14 <b>males</b> 265:9 271:1,3 <b>malignant</b> 213:8 213:15,17 <b>manner</b> 355:18 <b>manufacture</b> 51:16 <b>manufactured</b> 32:6,15,23 33:1 <b>manufacturer</b> 51:21 66:2 <b>manufacturers</b> 360:14,22 <b>manufacturing</b> 39:9 <b>marcel</b> 23:5
---	---	---	---	---

<b>marcus</b> 55:8	53:15 341:21	350:11	164:24 165:2	220:2 285:15
<b>margaret</b> 2:3,6	<b>material</b> 124:18	<b>mcneil</b> 70:11	165:10,14,15	310:23
36:24 337:16	159:4 161:24	<b>mdl</b> 13:20 14:5	191:16 194:23	<b>mesh</b> 309:2
337:18	163:15,19,22	14:9 16:17	209:11 211:19	<b>met</b> 37:21,24
<b>marginal</b> 265:11	165:2,11 173:1	17:8 39:5	212:11 259:8	68:14 338:6,12
<b>mark</b> 11:8 13:3	173:2 181:13	41:21 42:1	259:14,23	338:15
13:7 18:18	221:21 334:21	63:9 78:22	262:15 274:6	<b>metabolism</b>
23:18 25:20	345:1 357:21	<b>meagher</b> 2:18	276:17,20	232:7 255:10
26:9 89:6	365:18	<b>mean</b> 12:20 18:9	293:24 325:10	268:11
96:19 125:10	<b>materials</b> 11:18	27:8 33:16	358:11 372:17	<b>metabolite</b>
163:3 170:8	12:13 27:24	36:6 39:2	<b>meant</b> 354:8	254:18 255:6
<b>marked</b> 8:14	30:1 31:23	44:14,14 57:24	<b>measure</b> 350:15	257:3,10,17
11:10 13:4	75:1,16 76:7	63:12 65:1	355:15	<b>metabolites</b>
18:19 21:16	91:7 112:4	68:14 70:24	<b>mechanism</b>	255:11 273:6,9
22:24 23:19	125:21 129:7	71:1,5 74:6	239:5 241:7	273:16 274:10
24:15 25:21	131:23 132:10	76:16 82:18	260:6 268:9	<b>metabolized</b>
26:11,19 28:9	156:4 164:1	90:10 111:9	358:18	81:23 130:14
29:6 33:18	220:19 221:14	112:2,17	<b>mechanisms</b>	214:13 257:11
34:17 36:11	357:20	128:17,24	207:4	257:17
64:1 85:22	<b>matrix</b> 356:9	133:11 145:10	<b>mechanistic</b>	<b>metaplasia</b>
89:7 96:16	<b>matter</b> 13:14	147:15 169:19	243:5	278:7
100:17 103:22	14:6,9 16:17	172:22 186:22	<b>medica</b> 185:15	<b>meted</b> 358:17
120:9 155:8	16:17 17:9	188:14 189:13	185:17 186:7	<b>methodology</b>
157:21 163:5	19:24 20:21	191:19 194:11	186:10	108:23 109:5
167:11 171:9	21:10 25:19	195:5 209:17	<b>medical</b> 55:16	111:18,20
172:18 173:17	30:23 33:14	211:11,14,15	62:10 370:23	112:10 194:5
177:15 203:4	34:7 35:14	217:22,23	<b>meet</b> 187:10	194:15,15,17
239:9 245:24	36:3,23 37:12	219:16 222:20	<b>meeting</b> 60:14	300:10 311:3
258:6 263:8	37:17 38:11,24	227:11 241:15	60:16	362:9
269:15 275:23	40:19 41:16	250:6 261:8	<b>meets</b> 163:23	<b>methods</b> 79:13
290:16 298:13	42:1 45:8,19	268:4 273:14	<b>melanoma</b>	79:13
346:12 349:12	46:12 47:16	273:17 274:2	213:8,17	<b>methyl</b> 190:3,8
351:5,8 352:4	48:4 49:3,16	289:19 293:11	<b>member</b> 363:16	190:12 220:3
364:21	49:19 50:9	293:23 295:20	<b>membrane</b> 5:16	311:16,19
<b>marketed</b> 65:23	59:16,17 73:22	304:24 305:12	100:7,21 101:6	312:8
70:6,10	74:5 76:9 77:2	314:9 317:21	101:16,16	<b>methylphenyl...</b>
<b>marketing</b> 1:5	80:22 88:7	327:3,7,20	<b>membranes</b>	118:3 287:8
<b>marking</b> 346:14	108:19 155:13	334:17 345:7	313:4,18,21	288:14
352:7	207:1 219:20	352:16,24	314:12	<b>mice</b> 118:21
<b>marks</b> 105:2	338:21 339:1	353:15	<b>memory</b> 18:2	119:7 184:5
192:5 294:20	357:10 368:12	<b>meaning</b> 267:5	139:17 262:8	256:5,17,24
<b>mask</b> 52:15	<b>matters</b> 30:16	334:21	287:24 289:23	265:18 271:4
53:18	42:5 45:15,20	<b>meaningful</b>	<b>menstrual</b>	272:5,22,23
<b>masks</b> 52:4 54:7	46:4,15 48:13	111:13,13	233:24	273:3 274:15
55:8 325:19	48:23 49:9	<b>means</b> 81:21	<b>mention</b> 237:3	277:11,12
<b>master</b> 51:4	74:4 273:18	154:19 159:6	<b>mentioned</b>	278:8,15,16
<b>masters</b> 53:11	<b>maximum</b> 350:6	160:14 164:4,7	17:22 215:7	280:8 292:22

293:10,18,21 295:15 <b>michael</b> 1:13 2:13,16 4:4 9:3 9:15,23 47:18 189:7 335:2 371:10 372:8 375:15 <b>micrograms</b> 220:12 273:1 286:6 288:8 350:14 <b>middle</b> 86:19 355:13,14 <b>midsummer</b> 38:19 <b>migrate</b> 81:7,15 <b>migs</b> 272:20 <b>mike</b> 189:6 <b>mil</b> 286:6 <b>milligrams</b> 350:14 <b>milliliter</b> 288:9 <b>million</b> 279:19 280:2 350:13 <b>mind</b> 166:7 173:8 270:9 348:2 <b>mine</b> 35:15 79:7 276:1,5 368:17 <b>minerals</b> 52:21 <b>mines</b> 334:1 <b>minimal</b> 352:20 <b>minimum</b> 350:5 350:11 <b>ministry</b> 75:7,8 279:6 310:24 <b>minus</b> 47:1 <b>minute</b> 233:20 240:24 <b>minutes</b> 72:6,12 72:13 120:17 189:9,12,18,23 <b>mis</b> 300:15 <b>mischaracteri...</b> 313:6 <b>mischaracteri...</b>	165:14 <b>misconduct</b> 5:12 87:1,3,17 <b>misreading</b> 178:24 <b>missed</b> 30:5 78:17 91:20 103:14,14 173:10 <b>missing</b> 87:6 <b>mission</b> 66:4,16 68:6 205:12 206:4 <b>missouri</b> 3:13 51:2 <b>misstate</b> 351:10 <b>misstated</b> 218:23 <b>misstates</b> 87:22 <b>mike</b> 189:6 132:19 194:5 223:13 <b>misstating</b> 132:20 <b>mistake</b> 369:20 <b>mix</b> 330:2 <b>mixed</b> 137:20 233:22 <b>mixing</b> 306:10 <b>mixtures</b> 135:12 203:14 <b>ml</b> 220:12 <b>model</b> 122:7 123:1,2 222:2 222:21 223:21 224:1 225:8 262:8 279:4,7 316:15 <b>models</b> 115:6,9 123:1 218:1,2 328:8 <b>molecular</b> 30:9 51:8 57:8 134:6 341:23 <b>molecule</b> 124:19 125:22 132:1 221:18 288:3	357:22 <b>moment</b> 166:8 277:21 279:11 364:1 <b>moms</b> 52:22 <b>money</b> 206:15 <b>monograph</b> 6:18,20,21,23 7:5 154:7 187:4 246:3,13 247:1,16,21 248:5,14,23 249:4 251:15 251:16 252:2 255:16 256:12 258:9,11,17,22 261:21 263:11 264:20 267:15 268:5,12 269:12,18,19 269:21 270:9 270:23 271:14 271:17 272:1 272:11 275:3 275:19,21 277:2 301:11 304:18 305:20 <b>monographs</b> 6:16 239:13 248:8 274:3,18 <b>mononuclear</b> 277:13 <b>montgomery</b> 2:4 <b>month</b> 14:20 16:17 356:24 <b>monthly</b> 14:24 <b>morphologic</b> 118:20 <b>morphological</b> 285:19 <b>morristown</b> 3:8 <b>mortality</b> 234:2 <b>motion</b> 228:1 280:19 281:1 <b>mount</b> 3:8 <b>mouse</b> 281:24	285:20 293:3 <b>move</b> 119:15 152:9 153:10 182:19 184:8 187:13 227:22 241:24 250:24 255:18,24 280:14 318:10 <b>moved</b> 209:7 <b>msds</b> 5:17 132:21 133:11 134:24 299:6 299:11,24 304:16,22 305:15 360:13 <b>mucosa</b> 101:6 101:16 314:7 314:17 <b>mucous</b> 5:16 100:20 101:6 101:15 313:4 313:18,21 314:11 <b>mucus</b> 100:7 <b>muffled</b> 340:3 <b>muller</b> 123:2 <b>multiday</b> 356:23 <b>multidistrict</b> 349:18 <b>multiple</b> 52:1 55:10 68:15 71:6 129:12 213:13 247:11 274:16 280:9 280:12 306:12 368:18 <b>musk</b> 7:7 198:21 236:24 237:5 237:21 290:2 290:20 291:4,6 291:12,13 292:8,12,18,23 293:8 295:8,10 295:15 296:2,4 296:9 <b>mutation</b> 115:15 <b>myeloma</b> 213:13	213:15 <b>myfortic</b> 46:18 <b>myra</b> 23:3 <b>myroxylon</b> 162:15 168:3 170:3,13 171:8 171:16 172:22 <hr/> <b>N</b> <b>n</b> 2:19 3:18 4:2 <b>naloxone</b> 49:8 <b>name</b> 9:22 34:2 42:12 43:18 47:16 48:4 49:21 55:5,11 79:11 116:5 157:1 205:13 224:19 333:16 369:21 <b>named</b> 64:19 <b>names</b> 55:10 109:9 110:19 110:20 348:11 <b>nanomoles</b> 230:15,17 <b>national</b> 117:11 117:19 120:3 121:10 197:21 211:4 275:16 278:1 358:19 359:5 <b>natural</b> 54:5 <b>nature</b> 365:15 <b>near</b> 313:9 <b>nearly</b> 95:24 329:23 <b>necessarily</b> 81:18 123:14 160:16 195:2 211:15 222:12 228:15 305:16 345:19 361:21 <b>necessary</b> 122:2 131:18,20 132:12 301:3 301:23 319:22 322:3 323:17
---	--	--	--	---

325:22 353:13 361:22 373:4 <b>need</b> 17:14 24:7 25:7,14 27:12 28:21,24 61:7 71:24 72:3 81:5 84:5 88:4 124:17,19 132:6,24 133:16 138:21 152:4,14 154:12 160:1 166:12 178:15 183:7 197:2,3 200:21 222:9 222:14 227:17 240:24 245:11 245:12 254:20 255:24 258:22 270:8,15 271:24 305:3 310:16 314:23 319:15 357:16 366:5 <b>needed</b> 63:12,14 353:17 <b>needs</b> 133:7,22 183:14 274:3 <b>neiman</b> 55:8 <b>neither</b> 160:14 191:16 <b>neoplasm</b> 250:2 <b>neoplasms</b> 184:7 246:24 254:8 <b>neoplastic</b> 280:10 <b>nephrology</b> 278:6 <b>nephropathy</b> 278:3 <b>nervous</b> 250:10 <b>ness</b> 310:4 <b>neurotoxicant</b> 197:14 <b>never</b> 11:6 40:9 48:12 62:20,23	65:5,9 68:17 89:10 200:19 200:22 210:1 285:7 286:15 302:16 328:23 <b>new</b> 1:2 2:9,19 3:8 24:13 31:22 57:8,14 59:22,23 60:7 64:11 134:5 247:19 251:6 265:18 <b>newborn</b> 234:3 <b>news</b> 36:7 <b>niaspan</b> 48:5 49:3 <b>nice</b> 137:14 353:16 <b>nine</b> 18:22 <b>ninepage</b> 365:13 <b>niosh</b> 211:3,7 <b>nitrosamine</b> 323:10,14 <b>noadverseevent</b> 320:4 <b>nodes</b> 280:12 <b>noise</b> 72:20 <b>nomenclature</b> 130:2 <b>nonactivation</b> 119:2 <b>nonbile</b> 265:24 <b>nonclinical</b> 21:20 <b>nonfood</b> 181:24 <b>nongenotoxic</b> 125:24 <b>nonneoplastic</b> 265:23 <b>nonobjectiona...</b> 11:20 <b>nonprescription</b> 211:23 <b>nonresponsive</b> 153:11 182:20 184:9 187:14 227:23 255:19	280:15 318:11 <b>nonsmoking</b> 230:7 <b>normal</b> 12:22 <b>nose</b> 245:12 278:7 <b>notably</b> 97:22 <b>notary</b> 375:22 <b>notation</b> 139:22 364:18 365:2 <b>note</b> 249:7 366:2 <b>noted</b> 135:11 251:14 373:11 375:10 <b>notes</b> 376:1 <b>notice</b> 4:15 11:5 11:6,7,12,15 11:24 12:5 <b>nots</b> 332:6 <b>novartis</b> 46:18 <b>november</b> 15:2 16:6,7,18 18:8 40:23 <b>nrc</b> 5:19 120:4,5 120:12 <b>ntp</b> 183:22 184:2 268:16 275:16 277:22 277:23 278:12 278:21 279:15 281:13 286:1 359:9,10,15 <b>nude</b> 189:3 <b>number</b> 19:1,2 64:7 65:1 71:1 81:18 106:21 109:14 112:22 114:16 132:23 135:7,24 166:5 171:24 172:1 172:24 194:7 195:7 201:15 206:21 207:4 208:22 250:7 268:18 301:16 304:16,17 305:19 308:21	323:3 325:6 350:7 354:12 368:22,23,24 369:14,17,21 <b>numbered</b> 1:15 74:18 164:14 <b>numbers</b> 4:18 19:10,12,15 250:12 368:10 368:15,16,18 368:21 369:7 369:24 <b>nutritional</b> 342:5 <hr/> <b>O</b> <hr/> <b>oath</b> 170:12,14 <b>object</b> 21:1 28:13 32:8 33:3 39:17 48:19 50:11 53:20 56:3,9 58:7,24 61:3 61:12,21 62:6 67:6,13 68:11 69:1 73:12 77:24 81:17 82:7 83:8 84:13,19,21 85:17 86:6 87:2,21 88:8 90:17 91:9,17 92:10 93:12 94:13,21 96:14 98:7,21 99:4 99:16 100:8 101:10,23 103:12 104:18 106:6,19 107:13 108:1 111:6 112:14 113:10,21 114:13 115:4 119:21 122:5 122:12 123:13 123:18 126:5 127:4,10,17	128:15,23 131:7,16 132:16,18 133:9 134:14 136:6,21 138:22 141:5 141:12 142:20 143:2,15 145:9 146:9,22 149:2 149:9 150:5 154:15 155:14 156:24 158:3 159:10,24 161:14 165:22 167:4 168:21 169:17 170:22 171:22 172:10 172:14 175:21 176:5,14 181:3 181:19 183:2 186:2,15 187:21 188:6 190:20 191:11 191:18 193:7 194:4 195:1,24 196:11,16 197:1 199:9 200:17 201:2 201:17,23 202:5,21 204:5 206:23 207:7 207:10 208:10 208:17 212:19 214:7 215:2,12 215:24 217:18 217:21 219:11 221:8,12 222:11,18 223:5 224:4 225:18 226:1 226:24 227:7 228:2,13 229:3 229:22 232:4 233:9,19 234:8 234:18 235:14 235:15 238:3 240:19 244:22
--	---	--	---	--

246:9 247:3	270:17 291:14	75:12,21 77:24	165:22 166:14	251:24 252:16
250:5 251:5	306:7 307:5	78:4,9 80:6,7,9	166:18 167:4	252:24 253:11
252:16,24	330:14 340:23	81:17 82:7	167:14 168:21	253:21 255:2
253:11,21	341:1 342:24	83:8 84:13,19	169:17 170:22	256:6 258:12
254:20 255:2	345:11 347:16	84:21 85:17	171:22 172:10	258:21 259:11
256:6 259:11	347:20 348:9	86:1,6,15 87:2	172:14 173:8	260:13,22
260:13 262:21	348:22 351:3	87:6,21 88:8	173:13,16	262:21 263:18
263:18,20	353:24 359:1	90:17 91:9,17	175:21 176:5	263:20,23
264:18 267:7	359:20 360:23	92:10,15,17	176:14 177:1,5	264:4,10,18
268:3 269:7	363:3,12	93:12,17 94:8	177:9 181:3,9	267:7,14 268:3
270:7,14 271:9	364:11 370:18	94:12,21 95:4	181:19 182:4	269:7 270:7,14
277:1,20 282:8	<b>objections</b> 11:12	95:7,17 96:14	183:2,9,16	270:18 271:9
282:17 283:15	11:13,16 39:23	98:7,21 99:4	184:19 186:2	273:12,24
284:5,12	40:1	99:16 100:8,22	186:15 187:21	277:1,20
285:14 286:14	<b>observation</b>	101:10,23	188:6,21 189:6	280:18,24
286:24 288:19	25:1 285:10	102:23 103:12	189:15,22	282:8,17,21
294:6 295:19	<b>observed</b> 254:8	104:18 105:21	190:20 191:11	283:2,8,15
297:11,22	272:4 279:24	106:6,19	191:18 193:7	284:5,12
298:9,23 300:3	284:4,10	107:13 108:1	194:4 195:1,24	285:14 286:14
300:14 301:4	<b>obtain</b> 60:9	111:6 112:14	196:11,16	286:24 288:19
302:1,13,23	360:5	113:10,21	197:1 199:9	291:14 294:6
303:5,12	<b>obtained</b> 291:3	114:13 115:4	200:17 201:2	295:6,10,19
304:14 307:16	<b>obviously</b>	117:8 119:21	201:17,23	297:11,22
308:1,16 309:8	366:18	120:13,16	202:5,21 204:5	298:9,23 300:3
309:17 310:20	<b>occasions</b> 10:7	121:20 122:5	206:23 207:7	300:14 301:4
312:23 313:20	68:15	122:12,19	207:10 208:10	302:1,13,23
315:9 316:5	<b>occupational</b>	123:13,18	208:17 212:19	303:5,12
317:2 320:18	211:4	125:7 126:5	213:10 214:7	304:14 306:7
321:11 322:6	<b>occurred</b> 106:24	127:4,10,17	215:2,12,24	307:5,16 308:1
322:21 324:12	<b>october</b> 14:2	128:15,23	216:12 217:18	308:16 309:8
326:9,19	<b>odell</b> 2:3,5 4:8	131:7,16	217:21 219:11	309:17 310:20
327:19 328:21	11:11 13:17	132:16,18	221:8,12	312:3,23
329:9,15	14:14 15:16	133:9 134:14	222:11,18	313:20 315:9
331:14 332:4	16:11 17:18	134:21 136:6	223:5,12,18	316:5 317:2,14
332:21 335:10	21:1 24:19	136:21 138:8	224:4 225:1,18	318:21,24
337:10 363:1	26:2 27:12,17	138:20 139:23	226:1,7,10,24	319:1,6,11,15
<b>objecting</b>	27:21 28:13	141:5,12 142:2	227:7,14,19,24	320:18 321:11
219:13 251:9	32:8 33:3 36:9	142:20 143:2	228:13 229:3	322:6,21
<b>objection</b> 9:11	36:22 39:17,20	143:15 145:9	229:22 232:4	324:12 326:9
25:2 40:2	41:4,8 48:19	146:9,22 149:2	233:9,19 234:8	326:19 327:19
58:19 105:21	49:10,13 50:11	149:9 150:5	234:18 235:14	328:21 329:9
113:15 121:20	53:20 56:3,9	151:24 152:11	238:3 239:16	329:14 330:14
125:9 134:21	58:7,19,23	152:15 154:15	239:18 240:19	331:14 332:4
142:2,3 158:15	61:3,12,21	155:14 156:24	244:22 246:9	332:21 333:5
161:7 182:4	62:6 67:6,13	158:3,14	247:3 248:1	335:10 337:10
188:21 216:12	68:11 69:1	159:10,24	249:5 250:5	339:20 340:19
223:18 267:1	72:22 73:12	161:7,14	251:5,12,19,20	340:22 341:2



341:10 343:4 344:9 345:13 346:6,11,13 347:18 348:17 349:1,13 351:6 352:5 354:1 359:3,21 361:3 363:6,17,24 364:11 365:4 366:13 367:7 367:16,21 371:3,8 <b>odor</b> 179:16 <b>offer</b> 30:23 83:9 <b>offering</b> 19:24 30:7 83:12 108:12 <b>office</b> 5:11 89:4 89:10,14 <b>offload</b> 26:3 <b>oftentimes</b> 345:12 <b>oh</b> 164:16 219:1 246:12 248:12 346:9 <b>oil</b> 118:14 162:15 165:20 166:2 168:4,4 170:13 171:7,8 172:2 185:18 186:8 226:20 228:8 288:22 289:2,16,17,18 352:23 368:20 369:1,11,19 <b>oils</b> 167:9 <b>okay</b> 17:14 24:5 25:15,18 27:17 27:21 40:5 46:20 49:13 54:8 58:11 72:11,14 73:4 73:5 80:12 87:8 95:2 96:11,20 112:16 113:19 117:1 147:20	157:20 164:16 171:11 174:17 177:5,9 180:12 180:13 181:22 184:1 185:14 188:9 189:14 191:24 197:5 198:13 203:15 204:6 224:21 224:23 226:12 227:18 235:11 237:9 241:12 245:8 248:15 249:3 250:22 273:8,20 293:15 294:15 295:11 310:4 310:16 319:9 319:14 338:13 339:18,19 340:2,5,10,17 341:6 347:24 348:3 350:2 352:6 368:6 <b>older</b> 209:5 <b>omitted</b> 97:13 249:10 <b>once</b> 40:2 41:11 110:8 201:22 202:3 257:16 364:24 <b>ones</b> 110:11,12 135:9 <b>ongoing</b> 362:22 367:9 <b>oocyte</b> 117:13 218:2 <b>open</b> 12:12 270:1 <b>openended</b> 144:6 191:2 204:11 <b>operate</b> 239:7 241:9 358:18 <b>operative</b> 242:11 <b>opine</b> 61:15 83:4	176:9 207:1 313:2 <b>opined</b> 79:4 <b>opining</b> 79:12 145:15 208:18 <b>opinion</b> 7:6 33:7 40:15 81:10 82:2 83:10 84:3 91:1 105:6,12,19 106:3,11 108:8 131:11 144:12 144:16,18 169:10 190:8 192:9 194:16 194:20 209:20 212:5 292:13 309:22 321:9 322:17,23 326:3 327:14 331:23 332:7,9 332:12,17,23 336:7 343:22 371:2 <b>opinions</b> 19:23 20:1 30:3,7,22 32:3,12 33:8 35:14,15,16 39:13 40:11 41:20 67:23 73:10 74:5,8 80:22 81:1 83:13,16,19 84:11,17 85:2 93:6 94:1 108:13,17,19 109:1,6 112:1 112:12 123:11 208:13 311:6 334:4,12 335:13,17 343:6 345:3 352:14 353:9 353:13,18 354:18 361:22 362:1,5,8 370:11,14	<b>opportunity</b> 144:10 255:23 267:17,21 365:5 366:4 372:9 <b>oppose</b> 228:1 280:18,24 <b>opposed</b> 327:5 <b>oral</b> 64:9 119:7 256:18 271:1 284:20 292:21 293:12 <b>oranges</b> 146:15 218:19 <b>order</b> 9:13 17:15 28:19 38:1 109:3 131:11 132:12 133:21 138:21 158:17 200:21 206:18 221:2 222:8,15 286:16 346:16 350:10,17 360:4 <b>organic</b> 51:5 341:22 <b>organization</b> 85:16,18 180:22 284:18 <b>organs</b> 217:10 218:4 278:11 279:18 280:9 <b>original</b> 217:11 373:15 <b>originally</b> 40:21 41:4 43:4 <b>orleans</b> 2:9 <b>osha</b> 296:18 <b>oticara</b> 43:5 <b>oticus</b> 43:4 <b>ounce</b> 137:8,11 <b>outcome</b> 231:18 <b>outlicensed</b> 210:20 <b>outline</b> 344:10 <b>outlined</b> 301:11 <b>outset</b> 9:9	368:12 <b>outside</b> 47:2 72:21 <b>ovarian</b> 62:24 67:2 71:14,20 82:6,12,24 83:7 106:12 108:9 114:11 115:1,2 116:13 117:5 182:24 185:7 195:12 195:15,17,23 197:6 199:7,18 210:5 214:1,3 216:10,20 217:16 219:8 219:10 228:10 228:11,23,24 229:20,23 233:18 234:6,9 234:20 235:2 251:3 252:2,15 277:19 278:23 279:4,8 283:14 285:5,11 288:3 294:3,11 295:17 296:4 307:15,22 309:24 310:11 315:22 316:4,7 320:16 322:18 324:22 325:2 327:18 332:2 332:15,19 364:9 <b>ovaries</b> 114:19 206:20 207:6 207:19,21 208:9 219:19 219:22 222:1 279:14 280:10 282:10 285:9 318:4 <b>ovary</b> 114:18 115:16 116:3 116:16 117:11 117:19,23
---	---	---	---	---



118:5,13,15,19 119:1,4 183:23 218:2 220:10 220:17,22,23 221:24 230:17 230:20 283:20 285:17 288:7 302:21 303:10 <b>oversight</b> 15:20 17:23 95:2 103:16 180:1,9 <b>oversights</b> 180:14 <b>overstatement</b> 79:2 <b>owner</b> 66:16 206:11 351:1 <b>oxidation</b> 317:6 <b>oxidative</b> 310:8 316:1,20 317:6 321:15 <b>oxide</b> 257:3,8 <b>oxycodone</b> 60:7	104:4,17 115:22,24 116:7,8,15 121:4,9,13 139:21,24 140:6,13,18 145:4 148:3,18 150:2 164:11 164:15 167:15 167:16 168:11 173:6 174:3 177:2,4,6,20 178:12 179:5 179:24 180:4 186:4,5 192:20 203:12 209:2,3 209:10 210:11 218:8,24 226:9 236:8,15 246:13 247:2,7 247:15 248:19 248:21,24 249:1,8,18 250:7 254:3,4 256:13 258:3 258:13 266:14 266:15 268:12 271:14 272:12 280:21 281:3 287:5,9,11 289:24 290:4,6 290:24 292:13 295:21,24 296:14 303:22 311:13,15,20 312:4,8 313:5 346:20 347:21 348:2 359:8,8 374:4 376:2 <b>pages</b> 18:22 26:24 29:9 79:3 121:5 164:13 175:1 185:15 233:15 248:20 269:22 275:17 276:7 284:16 375:6	<b>pain</b> 60:3 <b>palatability</b> 64:13 <b>pancreatic</b> 250:10 <b>panel</b> 118:22 156:2 158:2,20 159:2,21 160:6 161:6,10,22 162:4 180:22 181:16 274:21 288:23 289:5 289:10 <b>paper</b> 96:12 177:12 310:5 <b>papers</b> 67:1 310:15,17 <b>papillomas</b> 265:12 272:23 <b>paracaresol</b> 237:6 <b>paracresol</b> 118:18,23 197:24 233:21 237:3,22 281:5 282:11 283:19 284:11 285:5,9 285:12,12 286:5,12 355:22,24 <b>paracymene</b> 119:3 <b>paradigm</b> 5:19 120:2,12 122:6 <b>paradigms</b> 102:20 104:8 <b>paragraph</b> 95:13,15,18 96:1,1,22 97:6 97:20 98:5,24 99:8,13 100:2 100:5 101:4,4 101:8,17 102:12,17,19 103:1 104:6,14 104:16 140:13 158:1 174:4	180:12 181:5 181:23 240:12 241:1 250:8 291:1 292:14 293:12 <b>paragraphs</b> 90:4 257:2 <b>paraphrase</b> 91:19 103:13 <b>paraphrased</b> 96:11 98:8 100:9 101:11 <b>paraphrasing</b> 92:2 96:8 <b>pardon</b> 234:16 <b>paren</b> 97:14 <b>parens</b> 97:10,17 <b>part</b> 22:23 24:12 24:16 26:8 28:5 70:13 78:8 133:5 134:3,8 137:13 144:18 154:2 158:21 206:12 217:6,23 223:3 223:16 239:2 241:18 242:1 242:15 248:7 248:15 268:24 272:13 279:19 280:2 291:22 301:23 308:7 308:10 311:8 313:11 321:14 350:22 363:10 <b>partes</b> 49:4 <b>partially</b> 125:19 244:23 <b>particle</b> 220:15 220:16 328:4 356:14 <b>particles</b> 207:5 208:9 220:5,6 328:1 <b>particular</b> 37:17 63:17,18 109:23 120:18	131:5,12 132:3 133:6,18,21 145:20 167:15 177:2 220:16 248:16 262:19 262:20 279:23 291:20 347:4 354:14 <b>partner</b> 349:17 <b>parts</b> 242:7 274:4 350:13 <b>party</b> 210:22 <b>paste</b> 90:13 91:5 93:8 <b>pasted</b> 90:5,8 96:3 100:6 <b>pasting</b> 90:21 92:24 <b>patent</b> 10:10 45:21 47:7,8 48:2,7 49:5,20 49:22 50:4 <b>patents</b> 66:23 <b>pathological</b> 62:20 <b>pathologist</b> 62:15 <b>pathology</b> 62:18 62:24 161:12 <b>patients</b> 62:13 <b>pay</b> 206:15,17 361:2 <b>payment</b> 360:4 <b>pcpc</b> 3:21 <b>pcresol</b> 281:5,9 282:6 283:13 284:3,11 285:5 286:11 <b>pdf</b> 41:9 270:1 <b>pediatric</b> 64:14 <b>peel</b> 185:18 186:8 <b>peels</b> 218:15,17 <b>peer</b> 112:13 <b>peerreviewed</b> 63:11 102:4 187:7 327:5,12
<b>P</b> <b>p</b> 1:16 2:3 163:11 164:4 192:2,3,4,7 245:19,20,21 245:23 294:17 294:18,19,22 333:7,8,9,11 371:12,14 <b>paes</b> 6:13 177:23 179:5,15 <b>page</b> 4:14 5:4 6:4 7:4 8:6,9 8:12,15 13:22 18:23 53:2 79:8 81:4 86:15,17,20 89:5 95:10,11 96:2 97:4 98:5 98:14,16 99:8 100:1,5,16 101:5,7 102:10 102:17 103:18				

<b>pending</b> 95:8 183:13	<b>peroneal</b> 63:5 189:1 200:5 201:10 206:20	<b>pharmaceutic...</b> 57:5 341:18	<b>phthalates</b> 6:13	232:18 253:22
<b>people</b> 79:3 189:3 219:10 229:1 302:5 305:2	207:6,18 219:21 229:8 231:15 308:6	<b>pharmaceutics</b> 30:10 51:9 341:23	<b>physical</b> 31:9 109:16 343:18	256:7 273:21 279:11 284:6
<b>peppermint</b> 369:19	<b>person</b> 130:3 132:5 274:7 302:7,7	<b>pharmacokin...</b> 130:17	<b>physiologies</b> 357:13	293:16 324:18 333:4 339:9,22 346:8 354:3
<b>percent</b> 42:15 42:19,20 44:9 44:12,16,18,22 202:20 203:21 204:2 220:11 272:18 306:13 330:16,20 350:13 353:1 355:11	<b>personal</b> 3:20 45:4 47:20 178:2 179:8,19 339:16 340:7	<b>pharmacokin...</b> 130:19 232:6 268:10	<b>pick</b> 64:5 184:16 <b>picking</b> 241:17 255:14	373:3,8 <b>plug</b> 24:6,7 25:14
<b>percentage</b> 42:7 209:18 331:16	<b>personally</b> 69:15,20 189:2 193:23	<b>pharmacologi...</b> 109:19	<b>pieces</b> 76:12 350:20	<b>plugging</b> 109:11
<b>pereirae</b> 162:15 168:4 170:3,13 171:8,17 172:22	<b>perspective</b> 31:24 229:14	<b>pharmacologi...</b> 257:18	<b>pigs</b> 274:15 <b>place</b> 325:16 <b>placed</b> 241:6 <b>places</b> 55:9 110:5 151:16	<b>plunkett</b> 80:19 <b>plunketts</b> 80:2 80:15
<b>performed</b> 288:16	<b>pertinent</b> 12:18	<b>pharmacologies</b> 232:16	<b>plagiarism</b> 86:14,22 88:5 88:21 89:18,24 90:2,23 93:22 146:2	<b>plus</b> 108:8 <b>pm</b> 70:14
<b>performs</b> 158:20	<b>peru</b> 6:6,8 162:12,16 164:17,21 165:20 166:2 167:23 168:4,7 168:12,17 169:23 170:1 170:12,18 171:7,7,8,12 171:15 172:9 172:17 188:10 305:1 318:3	<b>pharmacopeias</b> 153:5	<b>plagiarized</b> 370:5	<b>point</b> 11:16 12:3 12:8 40:10 75:7 76:17 87:15,18 171:3 171:23 189:5 220:2 227:14 233:16 234:24 253:22 310:6 335:21 366:20
<b>perinatal</b> 234:2	<b>pesticides</b> 97:15	<b>pharmaform</b> 47:18 57:4 71:4 206:5,6	<b>plaintiff</b> 46:3,5 46:7 78:21 107:9,22	<b>pointed</b> 76:17 188:10
<b>perineum</b> 81:7	<b>petition</b> 174:7,9	<b>phenol</b> 281:14 281:23	<b>plaintiffs</b> 2:11 7:9 10:2 11:20 13:1 18:16 21:14 23:17 38:22 39:4 40:9,18 46:11 63:8 73:10 74:9 75:2,14 76:8 81:14 107:11,17 127:1 267:1 347:12 348:6 349:17 361:15	<b>pointing</b> 249:15
<b>period</b> 141:10 141:18 319:7 319:14	<b>pfizer</b> 49:5	<b>phone</b> 37:15 64:6	<b>plasma</b> 309:3	<b>points</b> 71:6 340:3
<b>peritoneal</b> 328:2	<b>ph</b> 1:14,23 4:4 9:15 51:8 55:19 335:3 372:8 375:15	<b>phonetic</b> 55:7	<b>pleading</b> 346:2	<b>poisons</b> 129:5
<b>permanent</b> 325:19	<b>pharmacal</b> 66:4 66:16 68:7 206:4	<b>photocopy</b> 258:18	<b>please</b> 9:6,22 10:18 25:8 96:9 113:18 114:2 117:8 120:7 189:18 205:18 208:5	<b>policies</b> 87:17
<b>permeability</b> 229:10	<b>pharmaceutical</b> 21:21 22:1 30:15 49:20 52:17 112:19 151:14 356:10	<b>phototoxicity</b> 186:6 188:24 323:8 324:22 325:1	<b>plane</b> 338:17	<b>polyps</b> 272:3
<b>permeation</b> 81:21		<b>phrase</b> 264:19	<b>plasma</b> 309:3	<b>pontificate</b> 227:16 255:24
<b>permissible</b> 91:13		<b>phthalate</b> 174:23 175:5 175:12 176:12 176:20 177:23 178:21 179:5 179:15,16 182:8,23 183:24,24 184:4 185:6 188:8 353:2,5	<b>pleading</b> 346:2	<b>pool</b> 302:5
<b>permission</b> 125:8			<b>please</b> 9:6,22 10:18 25:8 96:9 113:18 114:2 117:8 120:7 189:18 205:18 208:5	<b>portion</b> 130:13 181:4 343:24
<b>permitted</b> 150:15 169:7				<b>portions</b> 255:15
				<b>pose</b> 180:16 269:14
				<b>posed</b> 111:15
				<b>position</b> 50:1 53:8,13,16 274:5
				<b>positive</b> 118:24 127:23 230:4 279:17 285:16

<b>positively</b> 217:7 <b>possible</b> 82:8 212:14,22 236:17 237:24 245:9 263:1 266:13 283:24 305:24 327:13 364:22 <b>possibly</b> 197:24 237:4 242:5 243:9 276:18 276:20 281:5 <b>potential</b> 6:12 81:12 105:15 118:9 123:22 144:1 150:1 192:13 195:18 197:12 212:7 216:8 231:18 236:6 237:16 237:24 244:1,4 244:7 258:1 259:18 262:2 262:24 265:3 266:12 271:21 281:10 282:6 287:12 323:10 323:13 343:14 358:23 <b>potentially</b> 128:21 237:16 303:13 <b>powder</b> 1:5 7:10 7:14 31:6 32:5 32:14,21,22 38:15 41:24 42:4 65:10,15 65:18 66:20,21 66:24 67:8,24 68:10,14,16,19 69:6,16,21,23 70:22 71:10,17 75:9 79:15,20 79:24 81:6,15 105:8,13 114:11,24 116:12 119:10	124:6,6 134:19 135:5,18,20 136:2,10,13,20 137:9,17 140:14,16 141:23 142:24 143:12,19 144:20 147:3 168:18,19 170:20,20 172:8,8 173:1 192:11,17 193:15 196:9 197:10 200:3 201:9,22 207:20,20 209:21 216:10 217:15 225:15 225:24 232:24 233:7 236:4 237:15 243:19 252:22 286:12 286:22 302:11 309:16 312:19 323:20 324:7 325:17 326:5 328:18 329:6 330:2,19 334:8 335:5 343:15 346:18,24 347:5 349:5 350:1 352:10 352:13 355:12 355:16 357:11 <b>powders</b> 345:15 <b>ppm</b> 280:8 <b>practice</b> 14:21 362:15 <b>practices</b> 1:6 85:1 <b>preamble</b> 6:17 119:22 228:2 239:12,22 240:4 <b>precise</b> 20:6 <b>predecessor</b> 300:1	<b>predisposed</b> 293:21 294:1 <b>predominantly</b> 303:20 <b>prefer</b> 17:3,3 129:24 329:20 <b>pregnant</b> 52:21 <b>prenatal</b> 52:18 <b>preparation</b> 18:12 34:24 35:24 88:6 <b>prepare</b> 20:2 29:3 38:18 39:1 74:4 <b>prepared</b> 24:20 <b>preparing</b> 14:11 30:2 31:7 33:21,23 34:6 35:13 73:11 77:1 <b>prescription</b> 211:22 <b>presence</b> 361:11 <b>present</b> 3:22 52:21 59:20 124:11 140:14 147:4,9 154:18 156:13 200:1 247:22 262:15 266:7 320:9 330:17,19 334:22 355:17 356:5 <b>presented</b> 60:15 158:6 223:19 <b>presenting</b> 59:18 <b>presently</b> 48:22 <b>pressure</b> 73:7 <b>presume</b> 46:11 <b>presumed</b> 352:24 353:4 <b>presuming</b> 315:4 <b>presumption</b> 142:8 219:16 <b>pretend</b> 91:15	<b>preterm</b> 205:6 <b>pretty</b> 30:18 191:10 261:15 344:2 <b>prevent</b> 101:18 205:5 207:5 <b>previous</b> 247:17 <b>previously</b> 45:13 48:14 77:11 187:24 195:14 223:8 257:4 260:8 300:17 301:15 303:1 320:21 329:14 <b>primarily</b> 184:7 215:22 <b>primary</b> 74:13 149:16 214:23 215:9 342:3 <b>principle</b> 125:16 <b>principles</b> 132:4 <b>print</b> 15:11,15 <b>printer</b> 15:14,15 <b>prior</b> 11:17 12:24 19:7 57:9,14 94:22 195:16 349:2 <b>privileged</b> 80:8 80:9 <b>probably</b> 16:6 44:12,21 77:9 169:19 175:10 238:11,15 243:12 263:13 340:4 358:10 <b>problem</b> 184:17 241:18 <b>problems</b> 129:4 220:20 233:23 <b>procedure</b> 1:19 <b>procedures</b> 5:21 155:6,12,18 <b>proceeding</b> 41:24 60:12 <b>process</b> 39:8,14 61:1,10,20	76:20 336:1,8 336:9,14 337:2 337:8 362:20 362:21 367:8 367:12 <b>processes</b> 89:20 <b>processing</b> 39:15 <b>prodrugs</b> 257:15 <b>produce</b> 51:16 82:5 284:22 306:23 321:22 <b>produced</b> 1:14 12:7 13:2 17:21,22 18:16 20:17,21,22 21:8,12 23:16 24:16 33:13,16 34:16 74:18 141:4 360:13 365:23 366:12 <b>produces</b> 82:13 82:15 <b>producing</b> 353:11 <b>product</b> 32:22 33:1 45:7 48:5 49:7,15,22 52:4 54:2,5 55:3,11 60:5 63:4 65:23 66:8,17 68:8 69:5 70:3,19 70:20 99:19 113:2,4 119:11 151:15 152:20 153:8 188:22 202:20 204:2 204:24 205:2 205:13,15 231:14 252:22 302:11 308:7 308:11 312:20 328:13 330:3 356:7 <b>production</b> 8:8
--	---	---	---	---

<b>products</b> 1:5,6 3:21 5:14 32:6 32:7,15,16,20 32:20,24 33:2 33:9 38:15 50:19 51:17 52:17 53:18,22 54:21,21 55:14 61:1,10,20,23 62:5 65:4,16 65:19 68:16 69:11,16,19 70:4,5,10,14 81:13 95:19 96:23,24 97:7 97:8 98:2 105:14,16 138:5,13 139:2 139:7 140:23 141:19 144:2 144:13,14 152:22 178:1,2 179:7,9,20 181:24,24 186:24 192:13 200:1,2,2,6 205:1,9,10,23 212:6,8 231:9 231:21 312:16 331:10,12 335:5 339:16 340:7 342:7,9 343:8,16 <b>professional</b> 42:16,21 43:2 43:23 <b>profile</b> 32:1 109:17 130:17 134:7 <b>profiles</b> 64:11 <b>progesterone</b> 205:4 <b>program</b> 117:12 117:19 175:20 176:3 183:22 184:2 190:19 197:21 278:2	278:12 313:11 358:20 <b>programs</b> 359:6 <b>prohibited</b> 163:12,15 164:18 167:3 168:13 170:1 171:7 172:19 173:2 <b>prohibits</b> 162:23 <b>project</b> 63:17,19 <b>projects</b> 37:22 <b>prolonged</b> 309:23 <b>promote</b> 81:22 212:12 334:22 <b>promotes</b> 262:16 <b>promoting</b> 281:14 <b>pronounce</b> 116:4 174:2 230:12 <b>pronounced</b> 45:17 218:11 <b>proof</b> 313:24 <b>propanedioic</b> 119:6 <b>proper</b> 221:2 229:13 <b>properly</b> 40:14 <b>properties</b> 31:9 31:23 81:12 105:15 109:16 109:19 111:14 192:12 296:8 342:1 343:12 343:14,18 <b>propounded</b> 375:8 <b>proprietary</b> 343:21 <b>propylene</b> 140:21 <b>protect</b> 39:24 <b>protection</b> 281:4 <b>protective</b> 38:1	109:3 <b>proteins</b> 217:6 <b>protocol</b> 9:13 318:6 <b>protocols</b> 318:8 <b>prove</b> 81:14 <b>provide</b> 9:13 10:1 11:7 35:6 35:16 36:15 38:15 47:13 57:17 74:9 144:5 185:6 253:2,14 287:3 303:14 305:21 309:19 311:6 317:15 322:8 326:11 344:4 351:21 368:4 <b>provided</b> 11:18 19:8,16 20:17 35:12 40:22 41:12 46:16 47:24 48:9,14 50:12 75:1,17 76:7 124:1 136:22 137:5 142:11 143:5 145:22 200:19 200:22 201:12 210:1 225:19 226:2 233:4,13 248:18 249:1 251:14 252:8 286:16 302:17 329:24 344:19 345:19,24 346:2,16,23 347:12 348:4,6 349:15 350:24 354:23 355:9 368:11,16 369:8,17 <b>provides</b> 86:21 86:24 88:20 203:12 <b>providing</b> 70:2 108:16 160:18	311:7 <b>proving</b> 113:7 114:5 <b>provisions</b> 1:19 <b>pti</b> 3:15,15 <b>pubchem</b> 109:11 232:13 303:24 369:2 <b>pubchemd</b> 194:1 <b>public</b> 360:10,12 375:22 <b>publication</b> 23:7 114:9,23 248:2 <b>publications</b> 65:13 116:10 <b>published</b> 65:6 65:10 66:19 67:7 96:4 108:21,24 109:18 111:19 111:23 112:7 115:17 133:2 134:24 155:20 160:17 187:6 211:20 216:14 230:20 301:8 301:20 320:3 357:1 <b>publisher</b> 23:5 <b>publishes</b> 327:4 <b>pull</b> 16:23 24:22 99:22 154:2 166:8 258:10 359:12 <b>pulled</b> 169:23 <b>pulling</b> 17:11 <b>pulmonary</b> 256:5,23 <b>purchase</b> 343:21 <b>purchased</b> 301:11 <b>pure</b> 306:5 323:21,22 327:1 <b>purity</b> 76:19 157:16 160:18	163:24 272:18 <b>purpose</b> 12:11 22:4 23:12 31:7 <b>purposes</b> 336:12 <b>pursuant</b> 1:18 11:4 <b>put</b> 24:10 27:9 40:12 41:10 52:19 65:22 220:23 229:5 229:12 298:17 334:24 335:23 336:5,22 364:17 365:2 <b>putting</b> 108:20 113:2 325:15 <hr/> <b>Q</b> <b>qra</b> 155:21 209:7 <b>qras</b> 209:8 <b>qualification</b> 279:3 <b>qualifications</b> 341:16 <b>qualifies</b> 60:19 <b>qualify</b> 99:2,11 <b>quality</b> 58:13 76:18,19 <b>quantify</b> 207:17 <b>quantitative</b> 330:1 <b>quantitatively</b> 163:20 165:3 165:12 <b>question</b> 10:17 10:18,21,24 12:6 17:1,15 32:10 40:3,6 56:15,18 58:16 59:1,7 61:7 62:8 66:18 70:8 80:14 87:24 88:11 91:24 94:11,23 95:7 108:3
---	--	--	--	---

112:16 113:17	343:11 347:22	<b>R</b>	162:1 165:4	174:4 175:8
113:22 119:22	348:1 357:18	<b>r</b> 163:12,19	169:19 174:16	245:17 373:5
121:7 125:10	359:4,14	164:7 165:10	177:13,13	374:6,8,10,12
126:7 128:17	362:23 367:6,7	165:14,15	178:3,15,17	374:14,16,18
128:19 131:8	367:17	304:3,4 374:1	179:10 180:17	374:20,22,24
132:9 133:20	<b>questioning</b>	374:1	181:1 182:7	<b>reasonable</b> 72:8
138:17,18,19	370:7	<b>rabbit</b> 227:9	183:7,9 195:13	90:1 362:6
138:24 141:9	<b>questions</b> 8:14	<b>raise</b> 366:4	218:17 240:18	<b>reasonably</b>
141:21 146:13	16:9 21:4	<b>raised</b> 367:24	240:20 241:1	197:22 359:15
146:16 147:18	25:13 31:16	<b>ramirez</b> 3:23	241:20,23,23	359:16
150:7,10 152:6	39:2,6 64:17	<b>ran</b> 39:11 40:13	242:19,20	<b>reasons</b> 148:6
152:9,12,17	83:21 84:6	336:2 337:4	253:23 254:13	148:15 150:3
159:12,17	87:10 111:15	<b>range</b> 44:22	254:23 255:3	151:7 305:1
166:1,23,24	113:14 124:2	280:3	255:22 259:6	<b>reassert</b> 11:15
173:5 175:22	152:4 191:5	<b>rapidly</b> 284:22	260:7 261:5	<b>reavari</b> 55:7
176:9 183:6,11	227:15,18	<b>rappel</b> 3:20	279:15 281:20	<b>recall</b> 17:16 37:9
183:12,15	228:5 237:7	<b>rare</b> 278:9	289:11 293:6	37:23 64:4
185:4 187:17	251:11 252:19	<b>rat</b> 266:3	293:11 306:1	146:6 315:12
188:15 191:15	254:21 256:1	<b>rate</b> 34:20,21,23	310:16 311:5	358:3 360:1
195:6,6,14,16	263:12 264:11	35:4,9	327:8 337:23	370:7
195:21 196:1	264:12 267:2,9	<b>rates</b> 219:9	338:2,5 372:9	<b>recalling</b> 223:10
196:12 197:4,6	267:10,22	228:11,24	373:3 375:5	<b>receipt</b> 373:17
198:16 199:3	293:16 295:2	278:5	<b>readacross</b>	<b>receive</b> 201:8,21
204:11 208:5	316:9 333:2	<b>rating</b> 224:20	291:19	349:3
215:22 217:12	336:17,21	225:4	<b>reading</b> 86:16	<b>received</b> 40:23
219:14 223:7	339:7,8,17	<b>rats</b> 117:15	115:20,23	51:4 53:11,15
224:10 227:20	340:8,19 341:4	265:23 272:6,7	160:4 247:8	76:17 125:18
227:22 233:3	341:5,12 343:7	272:16 274:14	260:15,19,20	141:6 349:7
233:10,10	354:13 357:24	274:15 277:14	261:3,4,5	364:19
234:23 235:11	358:3 359:22	277:15,15	278:20 319:11	<b>receiving</b> 278:2
235:16 237:19	361:4 362:18	278:2,4,14	<b>readingacross</b>	<b>recess</b> 104:24
238:13 249:23	364:17,23	<b>reach</b> 63:13	291:3	192:3 245:20
250:21 251:18	365:10,20	207:19,21	<b>ready</b> 249:12,13	294:18 333:8
252:5,12	366:6 371:4,6	219:19 303:10	270:20 279:9	<b>recite</b> 93:15
254:23 255:21	375:8	<b>reached</b> 302:21	<b>reaffirmed</b>	<b>recognized</b> 41:6
261:2 271:5	<b>quick</b> 220:1	352:14	181:16	145:8 146:8,21
273:22 279:2	272:22	<b>reaching</b> 83:19	<b>realized</b> 41:12	194:10 244:8
279:10 282:14	<b>quicker</b> 24:21	109:6 345:2	<b>really</b> 18:9	<b>recollection</b>
282:22,23	<b>quickly</b> 13:9	362:8	112:18 193:9	16:15,19 17:19
284:7 295:13	214:6	<b>reaction</b> 125:17	259:19 279:3	20:20 21:7
296:23,24	<b>quite</b> 127:22	304:3	289:7 294:12	37:13 76:12
303:1 305:6	189:16,23	<b>read</b> 12:4 61:14	342:15 354:11	77:15 297:15
317:5,9,17	250:13	79:7 80:5	371:1	315:6
318:2,13	<b>quote</b> 184:3	99:18,24	<b>realtime</b> 197:3	<b>recommend</b>
320:20 323:22	342:21	132:21 155:7	295:4	182:1
329:10,13,15	<b>quoted</b> 289:4	155:19 160:1	<b>reason</b> 151:11	<b>recommenda...</b>
332:6 343:10	<b>quotes</b> 91:13		156:20 173:20	291:2



<b>recommendat...</b> 163:10 209:23 210:3 <b>recommended</b> 209:11 <b>record</b> 1:19 11:21 22:23 24:12 25:16 36:10 39:24 41:9 75:13 100:11,14 104:23 105:4 138:22 152:16 185:1 192:2,7 218:23 237:13 239:11 241:20 245:19,23 249:7 258:13 260:8 294:17 294:22 333:4,7 333:11 364:18 365:2 371:11 372:6 <b>recorded</b> 299:11 299:13 <b>rectal</b> 250:10 <b>reddy</b> 116:16 <b>reduced</b> 354:9 <b>reduces</b> 306:19 <b>reducing</b> 118:24 <b>reengaged</b> 303:14 <b>rees</b> 3:2 <b>refer</b> 25:15 32:19 81:5 115:12 252:2 329:18 <b>reference</b> 5:6 23:14 25:7,9 27:4,8,8 29:3 36:5 74:23 77:3,22 85:12 107:4 115:18 150:13 168:3 174:22 176:19 177:8,17 234:6 275:13 304:10	305:8 342:13 <b>referenced</b> 74:11 107:7 303:18 307:9 310:17 320:11 322:13 324:2 361:5 <b>references</b> 27:1 27:23 28:8,23 29:18,20 34:18 36:15 237:8 238:6 249:24 <b>referencing</b> 185:1 282:2 <b>referred</b> 210:9 344:15 <b>referring</b> 27:24 32:22 72:22 115:10 130:11 153:14 160:2 167:14 176:22 177:1 198:7 226:8 251:23 274:13 310:19 342:15 <b>refers</b> 29:13 165:20 166:2 368:23 <b>refresh</b> 37:13 77:6,15 <b>refreshed</b> 77:10 <b>regard</b> 62:3 145:16 232:3 337:7 367:6 <b>regarding</b> 50:13 67:24 68:9 71:13,17,20 143:24 202:18 267:2 298:21 335:3 337:1,15 338:20 347:9 354:13,17 359:7 362:19 367:8 <b>regardless</b> 81:24 160:19 <b>region</b> 63:5	201:10 206:20 207:6,18 <b>registry</b> 110:15 193:4 210:14 <b>regular</b> 14:19 <b>regularly</b> 180:23 <b>regulated</b> 342:6 <b>regulation</b> 95:18 96:23 97:7 343:24 <b>regulations</b> 58:9 58:22 59:11,13 60:23 61:5 145:11 146:18 146:21 147:17 147:20 149:11 149:22 150:13 150:23 151:1,4 151:10,17 152:7 154:3,13 174:10 <b>regulatory</b> 57:20 58:6,12 58:17 59:9,15 60:9,20 61:1 61:10,19 62:4 95:16 97:5 144:20,24 145:3,7,16,23 146:1,7,20 147:4,9,18 148:5,7,18,24 148:24 149:16 149:20 150:1,3 150:12 151:2 151:21 153:2 153:24 154:18 155:1 156:13 156:21 162:11 162:21 174:24 182:8 185:20 186:20 188:4 188:18 190:5 191:8 283:18 340:14 343:10 <b>relate</b> 115:10	234:5 260:6 294:3,11 295:17 334:14 335:13 <b>related</b> 50:4 281:15,23 289:12 316:24 324:22 325:1 <b>relates</b> 1:8 50:9 117:5 132:10 147:18 267:4 267:24 271:22 337:8 347:8 <b>relating</b> 17:8 33:14 36:3 48:18 66:20 71:13 79:15 108:17 112:11 127:2 143:11 147:10 250:1 258:19 267:3 275:22 282:6 316:24 334:6 364:23 365:20 367:12 <b>relation</b> 362:22 <b>relationship</b> 124:17 125:17 126:1 129:6 131:21,24 216:8 <b>release</b> 356:9,10 356:12 <b>released</b> 202:9 <b>relevance</b> 293:4 <b>relevant</b> 84:17 243:5 268:7 352:2 <b>reliability</b> 225:6 <b>relied</b> 24:3 74:15 77:13 78:13 92:21 134:22 136:9 141:3 142:18 166:20,24 167:8 170:16 184:15 326:15	<b>rely</b> 84:1 88:15 202:13 222:21 252:5 296:16 310:12 <b>relying</b> 93:23 151:2 182:22 288:2 303:16 310:3 314:4 322:11 <b>remainder</b> 249:10 <b>remember</b> 46:23 47:1,17 64:20 77:19 79:11 120:6 <b>remote</b> 9:14 <b>remotely</b> 9:12 <b>removed</b> 142:13 169:13,20 354:5,6,7 <b>removes</b> 6:10 <b>removing</b> 173:21 174:5 <b>renal</b> 262:3,5 265:6 277:9,14 <b>renamed</b> 43:5 <b>render</b> 112:1 353:13 <b>rendered</b> 47:10 361:22 <b>rendering</b> 32:4 32:13 40:15 108:7 194:20 <b>renee</b> 3:17 339:15 340:6 <b>renowned</b> 161:11 <b>repeat</b> 10:20 40:6 73:4 114:1 131:8 159:11 175:22 215:20 284:7 329:16,19 340:1 <b>repeated</b> 357:7 357:8 <b>rephrase</b> 10:20
---	---	--	--	---

282:18 <b>rephrased</b> 195:14 <b>replaced</b> 209:8 353:3 354:10 <b>report</b> 4:21,23 5:7,8 12:13,14 14:12 16:5 18:17 19:7,20 20:14,18,21,23 21:8 24:2,4,17 25:19,24 26:6 26:8,22,24 27:5,11 28:1,2 28:6,10,17,21 28:22 29:1,1,9 29:16 30:2,21 30:21 31:1,16 33:16,21,24 34:6 35:1,13 35:24 36:8 38:18 39:1,3 40:22,24 41:16 41:19 62:24 73:11 74:11,22 75:6 77:1,3,22 78:8,23 79:5,9 79:19 81:4 84:1,7 85:13 88:6 90:4,8,11 90:14,22 91:1 91:4,15 92:7 93:1,6,8,21 94:16,19 95:10 97:21 98:19 99:3,13 100:1 100:5 102:10 102:17 103:10 104:3,16 106:20 107:7 108:20 109:10 110:6 115:12 115:20,22 116:7 119:13 119:16 124:15 126:16 127:9 127:16,19	128:7 135:3,10 135:22 136:4 138:12 139:11 139:16,19 140:4 141:4 142:10 145:5 147:5,7,11 148:19 150:2 156:17 157:2 160:12 166:6 167:15 168:3 169:5,19 173:3 173:6 174:22 175:2 177:2,6 177:18 183:3 192:16 194:22 202:14 208:21 209:15 210:11 218:8 232:10 236:3 248:19 258:2 262:24 266:8,11 275:16 276:7,9 277:22 279:5 279:15,23 281:11,13,22 284:18 286:2 287:5 289:11 289:15 296:11 298:5,15 303:19 305:24 310:18 311:1 311:16,20 313:2 314:17 315:15 321:18 326:17 327:17 329:4 331:4 332:10 334:6 334:13 335:2,2 335:8 336:9,20 337:23 338:3,5 342:13,13 343:8 344:11 344:13 349:3 352:18 353:11 362:3 363:8 367:11 369:6	370:2,6 <b>reported</b> 1:17 127:8 230:12 234:3 252:9 363:11 <b>reporter</b> 1:17 9:6 24:11 43:11,14 72:2 75:19 116:21 117:1 149:19 208:4 242:19 242:24 270:16 280:22 281:16 281:18 304:5,8 319:12 323:11 324:16 329:18 344:6 363:2,5 372:12,13,18 <b>reporting</b> 126:19,22 193:19 231:7 <b>reports</b> 28:14 78:21 79:14,19 193:12 250:9 306:2,4 320:8 <b>represent</b> 37:18 333:18 339:16 340:7 349:10 369:5 <b>representing</b> 2:11,21 3:10 3:15,20 <b>represents</b> 22:6 90:23 204:1 <b>repro</b> 278:11 <b>reproduced</b> 128:1 <b>reproduction</b> 217:9 372:17 <b>reproductive</b> 183:21 197:14 207:3 217:9 218:3 272:13 278:11 <b>reputable</b> 85:15 85:21 <b>request</b> 8:8	11:19 12:5 245:11 357:2 366:8 <b>requested</b> 201:12 233:13 253:6,13 372:7 <b>requesting</b> 38:23 <b>requests</b> 11:14 <b>require</b> 98:1 202:17 <b>required</b> 64:12 <b>requires</b> 279:3 360:4 <b>research</b> 5:11,12 40:14 67:12,18 74:4 87:1,17 89:4,11,14 126:18,20 156:3 157:4,7 174:8 197:11 224:9,13,16 236:6 251:10 251:13 <b>reserving</b> 366:4 <b>resin</b> 368:24 <b>resins</b> 135:14 167:9 <b>respect</b> 13:19 38:11 39:14 41:16 61:19 65:14 67:8,10 67:19 68:8,19 131:12 151:2 162:4 191:6 198:16,18 216:4,7 217:4 232:2 234:23 246:3 247:23 248:6 253:17 254:17 263:15 267:22 268:23 271:20 277:5 298:3 307:22 309:14 314:15 324:6 326:4 329:2	<b>respectfully</b> 348:11 <b>respond</b> 183:13 183:15,17 225:3 283:3 366:13 <b>responded</b> 282:21 <b>response</b> 11:19 17:10 82:14,16 119:17 121:17 124:4,17 125:13 126:1,3 126:15 131:21 131:23 132:14 133:7 134:3 174:6 183:10 183:17 201:1 215:6 216:22 217:7 221:11 273:14 283:4,7 285:17 306:21 308:13 317:16 321:14,23 322:4 325:12 325:23 326:7 <b>responses</b> 216:23 300:19 300:20 <b>responsive</b> 12:7 <b>restate</b> 359:4 <b>restricted</b> 160:15,20 163:12 164:22 164:24 165:2 168:13 173:1 191:17 305:1 <b>restricting</b> 159:3 161:24 <b>restriction</b> 209:11,14 325:5,8 330:16 <b>restrictions</b> 182:1 301:15 326:16,24 328:20 329:5,8 330:9,11,22
--	---	--	---	--

<b>resubmitted</b> 41:6 <b>result</b> 127:19,23 220:8 284:23 308:20 324:9 <b>results</b> 31:11 89:20 126:23 128:13 286:7 308:22 344:10 <b>retained</b> 13:14 13:18 50:15,18 <b>return</b> 373:15 <b>review</b> 5:20 25:23 31:6,8 34:24 36:3 38:14 49:4 63:20,24 73:15 73:17 75:8 76:9 78:20 79:2,18 80:2 83:21 88:5 95:16 96:5 112:13 118:22 133:16 144:3 145:19,23 149:6 155:3,6 155:11 156:6 166:19 180:21 187:19 193:23 274:20 289:5 289:15 305:18 327:13 336:18 344:11 365:16 <b>reviewed</b> 67:14 77:20 79:15,22 80:15 96:6 102:5 127:5 140:4 154:20 155:12,22 162:17 177:14 281:9 284:17 345:2 <b>reviewing</b> 25:11 39:8 63:11 67:17,17 74:4 112:10 144:6 166:18 204:12	343:18,22 345:5 <b>reviews</b> 180:23 <b>revised</b> 40:24 <b>rexpan</b> 156:8 <b>richard</b> 349:17 <b>rifm</b> 156:7 175:19 176:2,7 176:11,17 190:18 <b>right</b> 10:2 11:5 15:3,11 20:18 20:23 21:3 22:13 27:19 28:1 33:10 37:6 38:8 39:16 40:11 41:17,21 42:10 44:24 50:23 51:6,9,17 53:6 53:10 54:10 55:23 57:18,21 60:17 63:1 65:7 77:19 81:2,8 82:17 85:13 86:5 87:1 88:11 89:3 96:13 97:2,18 98:19 99:3,14,18 101:9 105:17 107:7 108:14 111:5 116:9 119:15 120:12 122:4,11 123:16,23 127:3 129:23 134:13,17 135:5 144:16 144:21 145:1,5 147:5,11 148:4 148:8,13,19 149:1,8 150:4 150:14,22 151:5,10,11 153:18 155:3 156:9,23 157:3	157:11,15 158:12 161:6 161:13 162:17 162:21,24 163:13,17 164:2,9,18,22 165:5,19 166:3 167:24 168:8 168:14 169:8 170:7,8 171:13 171:17,18 173:22 174:14 174:19,21 175:1,6,9,12 175:14 176:21 179:20 181:8 181:18 182:3 184:11 185:21 186:1,8,14 187:1 188:9,17 190:5,10 191:1 192:14,24 193:6,17,20,21 198:14 200:4 202:14 203:8 203:11,21 204:8,17,20,21 205:13 206:7 206:22 209:1 209:13 210:10 212:3,8 213:5 215:6 218:15 219:2,5 222:6 223:11 225:11 226:2,23 227:6 227:17 232:12 232:18 235:22 236:7,18,21 237:6,17 238:1 238:5,9,12,19 239:14 240:7 240:23 242:6 243:10,13,16 243:21 244:5,8 244:14,21 245:15 249:14 251:4 254:15	256:19,21,24 257:23 258:1 259:4,10 260:12 261:3,8 261:12,13 263:2,6 266:13 266:22 267:6 268:21 269:8 269:10,24 270:3,6 271:5 271:23 272:11 273:17 274:14 275:14,20 276:12,15,19 281:6 282:16 289:20 290:3 290:14,21 291:8,9 292:8 293:8,22 296:7 296:13,17,21 297:3,5,13 307:10,24 310:19 311:12 311:18 312:4 312:13 313:5 315:18,20 319:4 320:17 321:20,24 322:5 323:4 325:8,13 330:10,13 331:6,10,13,17 331:18 332:10 333:18 334:16 341:6 351:17 355:14 356:1 365:24 <b>righthand</b> 178:11 <b>rigor</b> 362:12 <b>risk</b> 5:19 71:9 82:5,11,22,24 83:6 106:5,12 106:18,23 119:20 120:12 120:22 121:2 121:10,16,19	121:24 122:3 122:15,24 123:5,7,11,17 124:20 125:1 125:23 131:5,6 131:12,14 132:2,6,7,13 133:1,5,6,17 133:21,22 134:2,8,12 180:16 182:14 182:24 187:11 191:13 199:7 200:1,7,14,18 216:23 217:16 220:23 221:19 223:3,16,17,21 223:24 224:2 225:7 234:6 246:23 249:22 250:1 251:3 252:15 266:24 269:14 277:19 278:23 285:11 290:2,13 292:7 300:21 316:21 <b>risks</b> 6:17 161:20 187:1 237:2 239:14 250:9 254:7 <b>robust</b> 254:12 <b>role</b> 161:17 <b>room</b> 24:24 <b>rosin</b> 220:2,15 356:5,8 <b>rosinate</b> 190:3,9 190:13 220:3 <b>rough</b> 20:11 <b>round</b> 43:7 <b>route</b> 130:18,22 151:20 152:24 182:15 214:10 219:15 355:6 <b>routes</b> 129:12,20 129:24 231:22 232:2 269:9 280:3
--	--	--	--	---

<b>routine</b> 63:15 356:19 <b>royston</b> 3:15 <b>rtecs</b> 110:15 118:21 119:8 183:19,20 193:5,11 210:9 210:13,17 211:1,9,11,13 211:18,23 212:3 <b>rub</b> 227:10 <b>rule</b> 335:2 <b>rules</b> 1:18 10:13 344:2 363:20 <b>run</b> 206:13 <b>rushed</b> 352:18	185:10 187:4,7 190:19 191:21 192:18,24 193:2,6,16 194:9 211:4 222:6 255:5 284:17 287:6 287:16 288:11 289:1 292:3 301:17 310:7 313:11 314:20 355:1,5,20,21 355:22 356:22 357:2 363:14 <b>saint</b> 3:13 <b>sake</b> 205:12 <b>sale</b> 206:12,14 <b>saleh</b> 176:24 <b>sales</b> 1:6 <b>salicylate</b> 311:17,19 312:9,10,11 <b>salt</b> 129:3 <b>sample</b> 355:13 355:14 <b>san</b> 48:2 57:6 66:4 <b>sandra</b> 3:12,14 <b>sarcoma</b> 277:8 277:11,15 279:16 <b>sarcomas</b> 278:9 278:15 279:18 279:24 280:7 <b>save</b> 330:23 <b>saw</b> 352:19 <b>saying</b> 116:23 127:23 173:9 185:9 310:22 <b>says</b> 17:5 86:23 87:3,15 88:22 99:1 121:21 152:21 158:9 159:5 160:4,5 160:9 161:15 163:18 165:10 168:15 171:6	171:18 173:23 174:17 179:21 181:20 182:5 203:22 223:20 239:15 240:8 246:13 257:1 264:20 275:4 277:2 292:9 335:2 348:11 368:23 <b>scent</b> 52:20,20 <b>schedule</b> 353:10 <b>sch</b> 7:6 198:24 290:11,12 292:17 <b>scholar</b> 305:19 <b>school</b> 56:5 77:8 338:16 <b>science</b> 30:10,16 125:15 203:23 305:18 327:9 <b>sciences</b> 120:4 121:10 161:13 <b>scientific</b> 5:10 12:21 86:4,11 86:12,20 87:13 87:16 88:10,15 88:19 113:7 114:6 181:23 221:3 222:8 237:1 290:1,12 292:6 307:12 362:6 <b>scientifically</b> 131:3,11 222:16 <b>scientist</b> 31:20 151:14,14 152:19 <b>scientists</b> 85:8 87:18 151:12 <b>search</b> 154:4 251:7 290:10 298:18 311:4 369:15 <b>searched</b> 74:14 154:4 368:21	<b>searching</b> 74:13 <b>second</b> 2:14 7:9 15:19 40:24 45:19 59:2 75:14 87:15 96:1 97:6,19 98:5 99:7 101:3,15 102:11,16 105:12 158:1 174:3 179:24 180:8 192:9 194:16 246:13 250:8 265:16 291:1 292:14 333:4 343:11 349:7 350:5 <b>secrets</b> 99:12 345:10 <b>section</b> 5:6,8 27:5 28:17 29:10 95:15 96:2 102:13 146:4 153:13 153:16,20 154:8 189:20 208:21 249:16 249:17,24 254:5 256:12 268:7 271:10 296:11 301:1 303:17 315:16 315:19 321:18 323:2 325:6 327:16 328:15 329:3 330:7 331:4 <b>sections</b> 258:18 <b>see</b> 16:12 34:18 34:19 63:13 79:3 86:10 87:3 89:17 95:11 96:8 97:22 100:2 102:13 104:6 104:11 109:12 110:2 121:12	161:18 162:12 164:12 165:13 166:6 172:2 176:7 177:21 185:16 203:16 219:9 228:10 228:24 246:12 249:18 256:15 272:7 277:10 292:15 293:13 303:23 359:14 <b>seen</b> 11:23 36:7 120:13,18 122:23 137:14 218:5 239:21 239:23 <b>segment</b> 359:23 <b>selective</b> 117:13 <b>sell</b> 54:19 70:16 <b>sells</b> 54:4 334:2 <b>sens</b> 231:12 <b>sense</b> 132:22 146:17 309:3 336:22 342:22 <b>sensient</b> 51:20 <b>sensitive</b> 208:8 293:3,24 305:2 315:24 <b>sensitization</b> 104:9 231:13 306:20 315:21 316:17 319:23 321:10 323:7,8 325:12,23 326:7 <b>sensitizer</b> 5:18 296:21 304:21 305:4 315:24 320:15 370:23 <b>sensitizers</b> 216:4 300:12,17 315:15,17,19 316:3,19,24 317:11 318:14 319:21 327:23 <b>sent</b> 16:5 <b>sentence</b> 96:22
---	---	---	---	--

97:6,20 98:16 98:18,19 99:2 99:9,12 100:6 101:15 103:1 104:14 177:22 178:14 179:4 180:1,8,20,20 181:10,15 259:6 <b>sentences</b> 98:3,4 98:24 99:10 101:17 <b>separate</b> 172:16 174:6 <b>separately</b> 34:12 <b>series</b> 13:6 357:23 <b>serve</b> 43:9,19 44:23 51:15 54:8 59:15 <b>served</b> 11:13 45:3,7 55:1 <b>serves</b> 289:23 <b>service</b> 19:9 65:3 70:3 <b>services</b> 1:22 34:13 35:11 <b>serving</b> 46:2 48:22 <b>session</b> 295:3 <b>set</b> 7:9 16:9 75:14 84:6 93:6 109:8 127:14 139:18 164:7 165:1 191:5 211:16 263:12 267:22 <b>sets</b> 86:4 121:9 290:19 <b>setting</b> 326:16 326:23 <b>seven</b> 145:4 148:16 152:16 <b>severe</b> 278:3 284:22 <b>severities</b> 278:6 <b>seyfarth</b> 3:17,20	<b>shane</b> 3:23 <b>share</b> 354:3 <b>shaw</b> 3:17 <b>sheet</b> 6:15 203:9 305:15 373:6,9 373:12,15 375:11 <b>sheets</b> 134:24 299:6,24 304:16 360:13 <b>shelby</b> 118:16 <b>shes</b> 39:23 <b>shockingly</b> 338:16 <b>short</b> 356:23 357:3 <b>shorthand</b> 1:17 372:13 <b>shortly</b> 20:17 349:2 <b>show</b> 94:6 143:6 217:24 311:21 346:14 351:7 352:6 <b>showed</b> 142:11 143:5 370:10 <b>shower</b> 7:12,12 32:21,21,24,24 105:8,8 114:11 114:11,24,24 116:12,13 119:11,11 124:6,6 135:23 135:24 136:16 136:16 137:4,4 137:11,12 140:17,17,21 140:21 142:17 142:17 143:1,1 143:12,12,20 143:20 144:24 144:24 147:10 147:10 148:11 148:11 168:19 168:19 170:20 170:20 172:8,8 192:11,11,23	192:23 196:10 196:10 198:16 198:16,18,18 200:3,3 207:20 207:20 209:22 209:22 216:10 216:10 217:15 217:15 225:15 225:16,23,23 232:24 233:1,7 233:7 234:23 234:23 236:16 236:16,22,22 243:19,20 252:22,22 286:12,13,22 286:22 302:12 302:12 309:16 309:16 312:20 312:20 323:20 323:20 324:6,6 326:5,5 328:19 328:19 329:7,7 330:3,3,22,23 334:8,8 345:15 346:17,18 347:9,9 349:5 349:5 351:19 351:19 355:16 355:16 357:11 357:12 <b>showers</b> 345:16 <b>side</b> 178:12 <b>sign</b> 372:9 373:8 <b>signed</b> 37:24 41:6 109:3 <b>significant</b> 43:7 110:21 230:13 <b>significantly</b> 279:20 <b>signing</b> 373:10 <b>silicate</b> 54:6,6 <b>similar</b> 198:17 250:15 257:13 291:11 296:8 300:7 313:3 330:22 351:9	351:18 <b>similarly</b> 225:21 <b>simply</b> 35:16 90:13 126:19 126:21 152:6 318:13 355:23 <b>single</b> 355:20 357:22 <b>sir</b> 49:10 92:15 122:19 184:19 260:23 273:15 320:13 <b>sister</b> 115:14 116:20 117:3 117:18,22 118:4,11,14 184:1 230:5,19 288:5 <b>sit</b> 199:14 224:6 315:5 365:15 <b>sites</b> 250:16 <b>sitting</b> 35:1 77:17 338:16 <b>sixpage</b> 365:8 <b>skadden</b> 2:18,20 <b>skatole</b> 116:15 <b>skill</b> 132:5 274:7 <b>skin</b> 81:20 82:4 82:10,23 83:2 83:5 130:6,18 140:11 182:17 214:11 215:1 215:11 219:18 227:6,10 229:10 231:2 231:12 272:21 281:24 304:2,3 304:4,5,6,21 307:13 311:10 311:17 355:4 <b>skipping</b> 180:19 <b>skips</b> 249:8 258:14 <b>slate</b> 2:18 <b>slightly</b> 40:24 <b>slow</b> 116:22 125:9	<b>slower</b> 242:20 281:20 <b>small</b> 250:13 253:18 254:9 302:5 <b>smaller</b> 357:15 <b>smoker</b> 213:13 <b>smoking</b> 213:3,4 213:7,19 <b>snips</b> 276:6 <b>socalled</b> 199:19 <b>sold</b> 55:9 205:21 206:11 210:20 <b>solvent</b> 179:1,13 179:14 353:5 <b>solvents</b> 177:24 179:6,17 <b>son</b> 215:4 <b>sorry</b> 39:19 40:5 43:16 49:14 59:1 75:19 95:14 116:21 116:24 121:6 149:19 150:6 153:15 157:19 159:11 175:22 178:5 180:3 186:4 191:1 195:20 198:7 231:6 232:16 242:19,22 248:12 266:16 270:23 273:1 281:17 284:6 287:9 290:4 294:7 295:11 295:21 296:22 298:11 300:19 311:13,23 323:11 324:19 324:24 359:10 359:11 363:4 363:18 369:11 <b>sort</b> 128:24 145:12 160:22 229:11 291:24 302:6
--	---	---	---	--



<b>sorted</b> 182:6	163:22	168:7 202:9,13	<b>statements</b> 90:8	321:16
<b>sorts</b> 308:23	<b>spectra</b> 70:18	202:23 203:6	91:6 96:12	<b>strike</b> 13:23
<b>sound</b> 38:7 72:7	<b>spectrablend</b>	209:6 343:10	103:8 229:12	27:6 32:18
<b>sounds</b> 56:10	69:9,22 70:12	<b>standpoint</b>	296:16	36:20 37:4
<b>source</b> 76:24	<b>spectraspray</b>	264:11	<b>states</b> 1:1 97:14	38:5 42:7,19
91:20 92:3	69:10,23 70:13	<b>stands</b> 120:6	154:12 180:20	44:8 45:11
102:4 114:14	<b>spelled</b> 117:15	<b>start</b> 12:24	211:8 247:16	51:11 52:7
150:19 167:8	<b>spend</b> 43:1	37:22 101:14	254:6 261:21	58:4 66:6
275:13 290:8	<b>spent</b> 16:16 17:7	151:20 153:1	271:15 275:3	67:22 68:4
<b>sources</b> 5:8	18:10 43:23	242:23 341:14	291:1 292:18	69:19 76:22
29:11,14,18,21	73:22 74:2	345:8 364:19	<b>stating</b> 101:18	100:16 103:18
29:23 30:1	265:18	<b>started</b> 109:10	300:16	106:9 108:23
36:4,16 74:15	<b>spleen</b> 278:8	110:9 159:16	<b>statistically</b>	119:18 136:13
74:23 76:15,21	280:11	<b>starting</b> 345:6	253:19 254:10	148:21 153:10
77:4,23 85:12	<b>spoke</b> 350:7	<b>starts</b> 96:22	<b>statutory</b> 148:23	154:23 182:19
90:11,14,15	<b>sporn</b> 117:16	97:22 99:9	<b>stay</b> 206:12	184:8 187:13
91:8,14 92:7	<b>spring</b> 38:5	102:12 258:13	<b>steering</b> 2:11	204:14 208:23
92:21,23 93:9	<b>squamous</b>	303:23	<b>steinemann</b> 5:13	211:12 213:3
93:10 94:17,20	265:11	<b>startup</b> 43:3	96:4,12,21	227:22 228:1
148:24 149:15	<b>st</b> 51:6 53:3	<b>state</b> 1:17 9:22	97:4 98:15	244:1 255:18
194:7 237:23	346:4 347:13	25:16 41:8	99:8	258:5 265:5
304:16,17	<b>stability</b> 46:1	88:18 95:3	<b>steinemanns</b>	266:9 280:14
305:20	<b>stable</b> 230:8	98:18 135:3	97:21	290:23 318:10
<b>south</b> 2:14 3:13	<b>stack</b> 15:17	139:18 192:16	<b>step</b> 120:8,8	345:8
<b>space</b> 373:6	<b>stages</b> 121:1	259:22 262:23	<b>steps</b> 112:3	<b>stromal</b> 272:3
<b>speak</b> 71:24	<b>stand</b> 158:14	266:11 279:7	121:1,11,15,24	<b>strong</b> 239:5
72:2 100:12,15	210:13 335:7	281:3 287:6	122:2	241:6 260:5
339:22	366:19	288:23 289:24	<b>steven</b> 1:16	358:16
<b>speaking</b> 91:4	<b>standard</b> 6:6,8	290:7 328:11	372:12	<b>stronger</b> 306:23
93:4,5 129:5	110:20 113:1,6	346:3 373:5	<b>stickers</b> 346:7	<b>strongly</b> 220:18
130:8 154:6	114:5 128:3	<b>stated</b> 1:19	346:10	<b>structures</b>
326:2	137:15,17	183:20 184:2	<b>stipulations</b>	206:21
<b>speaks</b> 182:17	153:6 159:3,8	198:2 210:7	8:11	<b>studied</b> 234:19
<b>specific</b> 21:4	159:23 160:7	230:4 304:23	<b>stogel</b> 1:16	235:23 286:3
67:1 113:11	160:13 161:23	308:5 310:7	372:12	314:20
148:6,23	167:19,23	316:19 327:21	<b>stomach</b> 130:14	<b>studies</b> 21:20
150:19 155:22	168:10 169:23	334:7	265:12	23:10 43:8
195:17 197:6	171:12 172:18	<b>statement</b> 97:9	<b>stones</b> 65:21	64:10 106:22
209:13 216:24	175:9,11 187:9	100:20 101:5	<b>stopped</b> 169:14	107:2,6 109:18
350:18	191:16 231:19	174:17 202:18	<b>straightforward</b>	110:2 114:17
<b>specifically</b>	<b>standards</b> 5:22	212:20 214:9	365:9	114:19 118:10
90:22 101:2	6:5 86:4 88:15	215:3 217:1,3	<b>street</b> 1:18 2:4,9	126:21 128:10
110:1 173:7	88:18 105:10	253:7 255:22	2:14 3:13,18	128:10 133:13
264:3	144:15 157:14	269:4 287:14	<b>strengths</b>	134:24 137:15
<b>specifications</b>	157:17 158:1,9	287:15 289:3,7	306:12	182:10 183:7
151:22 160:18	158:19 160:18	307:20 310:3	<b>stress</b> 310:9	185:2,5,9
<b>specified</b> 163:13	162:5 163:3,8	314:5	316:1,20 317:6	195:8,9,13,15

195:22 196:5,5 196:19,22 197:20 199:4 216:14 217:13 217:24 218:5 222:5 231:13 234:5 235:6,6 235:19 246:22 249:21 250:7 250:12,13,14 250:15 251:1 253:16,17 254:9 255:5 256:3,18 261:16,19,23 262:2 264:16 264:22 265:3 265:13 266:5 270:4,12 271:6 271:20 273:10 273:11,13 274:5,10 276:23 277:5 277:17 281:8 282:3,6,16 284:1 285:21 287:13,18,19 288:11,15 291:11,12,23 291:24 296:10 301:7,8,10 303:16 306:10 306:17 307:2 307:20 308:2 310:2 313:8 314:14,22 316:2,23 317:10,24 318:20 319:5 319:17 320:10 321:4,6 322:11 324:1,3 326:15 326:22,24 327:4 355:1,5 355:8,20,21 356:22,22 357:2 358:13	364:14 <b>study</b> 122:21 128:2,5,13,13 128:14 133:11 144:10 187:4,7 197:18 199:17 220:20 222:9 235:3 250:1 252:13 255:9 256:18 257:20 257:22 262:9 262:10,19,20 266:1 271:2 272:21 273:4 274:14 278:21 280:1,4 283:13 284:10 285:4,7 287:22 288:1,9 288:13,13,18 292:22 293:10 293:12,14,18 294:2 295:15 295:16,16 296:3 307:17 310:2 314:1,4 316:7 318:14 319:18 320:6,6 355:22 364:8 365:1 <b>stuff</b> 73:14 78:12 <b>styrax</b> 118:14 352:23 <b>styrene</b> 6:19 116:19 142:13 174:1,5,7,11 195:19 197:13 197:22 236:10 237:17 244:4 244:13 245:6 246:4,22 247:12 248:6 249:21 250:3 251:2 252:14 252:21 253:17 254:17 255:5 255:11 256:3	256:16 257:3 257:11,19 258:17 352:23 353:23 354:4 355:11 357:24 358:1,6,20 359:7,14 364:8 <b>styrene</b> 7 255:7 257:2,7,9 <b>subcontracting</b> 54:23 <b>subgroup</b> 253:20 254:11 <b>subject</b> 30:13 112:13 373:10 <b>subjects</b> 67:11 145:13 287:22 <b>submission</b> 19:7 <b>submissions</b> 58:2 <b>submit</b> 14:13 318:6 <b>submitted</b> 14:12 41:5 78:23 348:11 366:11 <b>subscribed</b> 375:18 <b>subsequent</b> 318:8 <b>subsequently</b> 328:3 <b>substance</b> 57:14 118:8 125:18 130:4,5,6,9,10 130:23 132:13 167:1 172:16 172:20 174:12 247:17 306:5 321:24 327:2,2 375:10 <b>substances</b> 6:10 99:20,21 110:16 128:20 129:12 132:11 193:5 210:15 327:15 360:14 <b>substantial</b>	118:8 287:7 352:22 <b>substantiate</b> 195:10 199:4 <b>substantiates</b> 106:16 <b>substantiating</b> 196:8 199:17 <b>sufficient</b> 239:4 241:5 242:9,12 242:17 243:3 244:20 245:2 257:6 260:4 324:8 326:6 353:12,18 357:22 358:12 358:15 <b>suggest</b> 90:20 93:21 <b>suggested</b> 313:22 360:17 370:4 <b>suggestion</b> 357:24 <b>suggests</b> 184:17 220:18 <b>suing</b> 46:9 <b>suit</b> 274:4 <b>suite</b> 2:9 3:3,13 <b>sum</b> 73:24 <b>summarizing</b> 145:19 <b>summary</b> 252:8 260:9 <b>sun</b> 189:2 <b>sunlight</b> 189:4 <b>supervision</b> 372:18 <b>supplement</b> 18:17 224:21 284:16 <b>supplemental</b> 7:8 75:13 <b>supplemented</b> 33:17 <b>supplements</b> 342:5	<b>supplied</b> 335:14 350:10 <b>support</b> 8:2 50:2 70:3 159:1,7 160:6 161:22 179:3 281:12 289:1 307:20 344:4 <b>supported</b> 180:24 <b>supporting</b> 243:4 <b>supports</b> 159:21 161:19 <b>suppose</b> 129:2 146:23 189:3 201:5 336:16 351:4 <b>supposedly</b> 331:18 <b>sure</b> 32:9 40:7 54:1 78:12 87:5 92:16 96:10 112:15 114:4,8 115:13 116:4 129:14 131:10 133:12 141:13,16 150:6 159:14 161:19 173:11 175:15,24 237:11 246:14 247:6 254:2 256:9 284:9 296:24 335:23 336:6,20 341:20 351:10 366:17 <b>suspected</b> 198:22 297:9 297:20 298:6 298:13 299:5 <b>sustain</b> 356:15 <b>sustained</b> 356:9 <b>swallow</b> 227:10 257:15 <b>swallowed</b>
---	--	--	---	--

214:12 <b>swear</b> 9:7 <b>sweeteners</b> 64:12 <b>sworn</b> 1:15 9:8 9:16 372:5 375:18 <b>sync</b> 276:4 <b>synonym</b> 171:16 <b>synonyms</b> 170:2 <b>synthetic</b> 6:10 174:11 <b>system</b> 155:21 202:10 206:1 207:3 238:8 240:3 250:10 272:14 299:15 300:2 <b>systemic</b> 225:5 312:15	29:12 37:16 49:17 71:24 72:3,7,12 91:13 94:5 98:11 101:22 101:24 103:18 103:20 104:20 110:24 112:3 120:17 137:17 144:4,9 147:24 150:22 156:19 163:2 166:7 168:24 172:11 173:4 174:21 177:16 185:13 186:24 189:13 191:13,22 203:2 216:2 218:7,18 231:10 245:13 246:10 251:6 254:2 256:11 270:8,15 271:13 272:22 275:18,20 288:5,10 290:18 292:10 294:13 318:3 340:4 352:12 365:7 <b>taken</b> 1:15 80:3 102:19 189:5 247:21 357:16 <b>talc</b> 3:10 13:19 14:5,9 16:17 17:8 32:20 33:9 39:5,9,15 41:21 42:1 63:9 65:22 69:10,13 78:22 106:17 108:8 124:5 144:14 200:6 212:6 220:5,6,15,16 306:15,19,23 308:6 310:7 312:19 328:1,4	334:1,2 335:14 335:17 337:9 355:11 356:7 356:14 <b>talcs</b> 325:18 <b>talcum</b> 1:5 32:5 32:14 38:14 41:24 42:4 65:10,14,17 66:19,20,24 67:8,24 68:10 68:13,16,19 69:6,16,21,23 70:22 71:9,17 75:8 79:15,20 79:23 81:6,14 105:13 134:19 137:16 335:5 343:15 <b>talk</b> 49:23 238:5 250:6 254:17 <b>talked</b> 37:15 182:13 195:19 204:3,6,15 244:11 301:14 302:14 337:22 338:7 356:3 364:13 <b>talking</b> 22:17 92:1,2 102:24 113:11 138:10 255:4 256:19 273:12 321:3 359:9 <b>taste</b> 64:11 <b>taught</b> 146:7 <b>tbutyl</b> 140:22 <b>team</b> 57:13 <b>technical</b> 55:1 65:3 70:2 111:9 275:16 342:22 365:14 <b>technologies</b> 4:16 42:14,22 44:3,10,18 51:20 <b>telephone</b> 3:18	<b>tell</b> 10:19 17:4 19:4 20:8 23:7 23:24 25:8,24 27:3 29:13 47:2 55:11 57:2 71:22 90:7 137:7 139:21,23 166:20 178:24 201:20 209:24 223:24 248:6 324:21 333:23 338:13 341:15 <b>telling</b> 159:17 170:15 221:14 <b>ten</b> 18:5,13 72:6 164:13 202:4 338:18 <b>term</b> 27:7 145:8 146:8,21 194:10,11 342:19 356:23 357:3,4 361:7 <b>terminology</b> 342:15 <b>terms</b> 35:12 38:22 44:13,17 52:12 58:3 73:8 74:3 100:12 123:10 143:10 153:21 165:7 208:2 261:10 313:17 328:15 341:16 342:12 357:14 358:23 <b>test</b> 137:18 291:5 <b>tested</b> 256:16 <b>testified</b> 9:16 56:12 361:21 <b>testify</b> 17:18 <b>testifying</b> 45:23 60:5 <b>testimony</b> 4:4 10:5 35:5,6 46:16,20 47:10	47:14,23 48:8 48:11,14 50:12 78:3,4 82:4 94:3,23 96:11 126:6 132:15 132:19 170:11 170:14 223:13 303:14 321:2 334:5,13 335:22 336:4 336:13 341:13 344:17 361:6 372:6 <b>testing</b> 79:13 135:18,21 138:2 207:16 <b>teva</b> 45:18 <b>texas</b> 1:17,18 3:4 43:20 52:3 54:4,9 338:10 <b>text</b> 90:13 92:6 93:8 <b>textbook</b> 22:20 <b>textbooks</b> 67:17 77:7 <b>thank</b> 20:13 86:1 104:21 173:16 177:5 239:18 249:6 304:9 319:20 333:2 339:4,22 340:5 346:11 351:17 363:5 371:6,8 <b>thats</b> 12:2,18 17:23 18:2 21:9,11 28:3 30:18 37:6 41:10 46:11 49:23 50:6 54:6 55:15,18 55:21 60:18 62:19 63:2 65:8 68:3 70:21 72:14 76:12,21 80:8 80:9 83:14
---	--	---	---	---

86:8,23 88:11	245:16 246:20	116:14 118:8	255:16 295:22	276:6 283:17
88:22 97:11,17	246:20 247:23	121:1 123:1	296:1 302:3,18	289:20,22
97:17 99:15	256:18 257:1	124:12 132:4	314:9,9 366:7	291:16 296:15
106:7,7,14	257:18 259:5	149:10 153:6	<b>things</b> 28:3	297:15 298:8
108:11,15,18	259:13,15	158:11 164:13	29:20,21 36:7	298:12,17
111:7,7,18,23	260:6 261:24	184:16 185:9	77:7 81:22	304:24 310:21
115:21 117:1	263:7 264:4	185:17 187:11	86:13 135:1	312:3 313:6
119:10,10	265:18 266:18	198:17 205:2	145:11 146:11	314:18 316:14
121:6,21 123:2	267:8 268:11	205:19 209:17	146:19 147:20	318:2,5,6,7
124:23 125:4	269:8 271:18	210:22 211:16	152:18 153:8	319:6 325:20
125:19 128:11	272:7,9,12,13	213:18 218:21	179:15 187:11	328:12 329:21
128:24 133:1	273:13 274:6	242:7 244:24	214:15 231:10	330:4 336:4
140:15 144:16	279:2,22	259:23 260:17	285:24 289:22	339:3 352:17
146:2 151:11	282:11 288:20	268:14 272:21	<b>think</b> 12:20	358:8 365:5
156:10 158:23	289:21,21	277:21,22	14:14 16:6	368:14 369:9
159:5 160:9,9	291:9,15 292:9	303:24 308:23	17:17 18:4	369:20
161:15 162:6	296:6 303:22	312:16 323:9	19:6 24:21	<b>thinking</b> 22:7
163:1,18 165:3	308:3,4 310:1	327:7 330:20	30:18 33:13	369:12
165:4,18 166:7	310:18,21	336:8 350:2,2	34:19 35:10	<b>thiola</b> 65:20
168:15 169:9	312:4,22 313:4	356:1 366:16	36:6 40:14	66:3,11 68:6,8
170:5,15	315:20 316:15	367:11	41:3,3 45:14	68:23 69:7
171:18 173:23	322:1,20,22	<b>theridian</b> 4:16	47:5 48:10	205:12
174:20 175:7	325:14 331:11	42:14,22 44:3	50:1 55:15	<b>third</b> 97:6
179:21 181:20	332:13,23	44:10,17	56:15 59:6	210:22 242:1
182:5 183:15	335:16,20	<b>theyll</b> 357:6	60:21 75:6,11	290:24 350:5
184:14 186:9	336:3,11 337:3	<b>theyre</b> 60:3,4	76:16,21 77:5	<b>thirty</b> 373:16
186:17 188:7	337:12 339:3	64:20 77:17	79:2,5,17 88:9	<b>thomas</b> 75:6
188:10,17	340:13,16,17	112:18,20	91:10,12 98:9	109:10 337:23
190:11 195:2,4	342:23 343:1	137:19 138:14	103:6 112:24	<b>thompson</b> 2:3,6
196:1,12,17	344:12 347:1,6	147:22 164:14	122:20 123:9	36:24 37:2
198:10 200:11	348:10 350:13	172:21 200:12	130:10 132:17	38:10 40:17
203:22 209:19	360:7,18,19	205:22 214:11	135:15 142:14	63:8 337:16,18
211:20 212:1,9	361:1 362:9	214:12,13	144:8 145:12	<b>thorough</b>
212:18,20	364:14 367:14	222:5 266:7	146:2 149:10	277:24
214:22 217:1	367:15,24	294:1 298:16	149:12 157:2	<b>thought</b> 15:16
218:14,22	369:11,20,23	303:20 314:11	157:12,12,16	45:12 178:7
219:21 220:3	<b>theory</b> 106:16	331:16,17	166:11 167:6	191:1 295:1
223:12,20	195:10 196:8	342:19,19	180:18 189:9	370:21
224:23 226:2	199:5	363:13,19	190:21 193:8	<b>thousands</b> 357:8
226:12,13	<b>therapeutics</b>	369:9	194:12 196:12	<b>three</b> 19:6 60:21
228:21 230:10	60:3	<b>theyve</b> 147:6	205:13 207:14	99:10 121:5
230:17,22,22	<b>theres</b> 17:20	205:20 209:6	215:6,16 216:1	148:23 163:11
230:24 231:1,7	52:14 64:19	245:8	220:17 233:2	172:23 236:16
231:11 237:1	78:16 84:3	<b>thing</b> 79:7	246:5 250:17	236:21 242:3,7
239:1,15 240:6	93:22 95:4,7	148:10 154:5	254:16 261:7	260:17,20
240:8 241:1	106:21 110:17	171:24 233:5	261:14 266:18	272:23 280:8
243:22 244:15	112:2,22	247:10 254:16	268:13 275:15	280:13 285:21

314:19,21 341:23 348:12 352:17 <b>threequarters</b> 42:24 43:22 <b>threshold</b> 125:22 204:7 301:22 302:2,6 357:21 <b>thresholded</b> 125:21 204:10 221:15 <b>thresholds</b> 301:12 <b>thumb</b> 4:21 23:17 24:14 265:20 <b>time</b> 9:5 10:16 13:13 14:2,10 16:16 17:7 18:10 34:20 37:12,20 38:24 39:11,12 40:1 40:12,13 42:16 42:21 43:2,23 44:9,12 45:2,6 66:15 73:7,14 73:21 74:2,3,7 98:12 104:23 105:4 141:10 141:18 143:1,7 143:19,23 189:17,24 192:2,7 206:16 245:19,23 247:19 257:5 294:17,22 330:23 333:7 333:11 336:2 337:4 340:4 348:20 353:12 353:15 365:6 366:5 371:12 <b>timeframe</b> 37:7 <b>times</b> 60:22 63:13 205:21 233:3 329:22	354:23 <b>tissue</b> 308:21 321:13 <b>tissues</b> 101:18 <b>title</b> 21:19 79:3 79:8 146:3 149:5 151:4,10 153:13,17,23 154:9,13,18 240:6 261:3,5 261:5 335:1,7 <b>titled</b> 23:2 281:22 352:9 <b>toaff</b> 117:15,15 <b>tobacco</b> 97:15 <b>today</b> 11:4 12:3 12:8,12,16 14:13 15:9,12 18:12,15 21:13 22:5,17 23:13 24:16 33:18 35:2 39:22 40:15 58:14 61:15 83:17 159:16 200:15 204:16 311:7 312:6 329:22 334:5 335:22 336:8 341:13 344:16 350:8 354:13 362:3 365:11,24 366:12,20 370:10 <b>todays</b> 9:4 <b>told</b> 41:4 44:23 49:2 70:23 78:6 131:22 <b>tongue</b> 231:1 <b>top</b> 13:11 18:23 27:1 158:8 254:5 355:13 <b>topic</b> 40:7 63:10 63:21 65:6,10 72:9,16 <b>topical</b> 140:10 140:19 182:17	231:9 <b>topically</b> 227:5 <b>topics</b> 40:16 <b>total</b> 73:21 99:24 204:2 255:16 328:13 <b>totality</b> 84:9 111:11 127:5 138:10 193:10 <b>tox</b> 56:4 133:11 133:13 288:15 356:22 <b>toxic</b> 99:20 110:15 125:17 193:4,11 210:14 <b>toxicant</b> 197:14 <b>toxicity</b> 4:20 23:3,10 57:7 81:12 105:15 183:22 192:12 217:24 284:22 286:3,8 328:8 343:14 <b>toxicological</b> 211:19 <b>toxicologist</b> 55:17,23 57:16 <b>toxicology</b> 30:11 55:20 56:2,14 56:24 57:12 77:6,14 110:2 117:12,19 123:2 125:15 130:20 145:8 145:10 146:6 146:18 147:17 147:21 161:12 192:18,24 193:2,16 194:9 194:10 197:21 278:2 284:15 288:18 327:9 358:19 <b>toxicologys</b> 359:5 <b>toxnet</b> 230:10	<b>track</b> 36:14 <b>tract</b> 81:8,16 <b>trade</b> 99:12 147:19 301:18 344:3 345:10 363:13 <b>traditionally</b> 102:12 103:2 104:9 <b>training</b> 56:1,8 56:10,13,20 57:13,18 62:17 122:10,15 <b>transcript</b> 80:3 80:16 295:5 372:9,17 373:17,19 <b>transcription</b> 375:7 <b>transcripts</b> 79:23 <b>transdermal</b> 129:16 <b>transfer</b> 219:17 <b>transformations</b> 118:21 285:20 <b>transparency</b> 175:13,19 176:2,7 186:11 190:14,18 327:7 <b>travel</b> 82:19 <b>treat</b> 62:13 <b>treated</b> 272:4 <b>tremendous</b> 110:17 <b>trend</b> 279:17 <b>trial</b> 35:5 48:11 48:12 79:23 <b>tried</b> 30:4 73:17 103:13 111:10 149:15 324:5 <b>trigger</b> 203:14 <b>true</b> 169:12 170:5 195:2 202:16 212:20 228:21 246:20	246:21 256:2 261:18 262:1 264:15 265:2 270:3 276:22 347:7 372:6 <b>truncated</b> 252:6 <b>trust</b> 247:8 264:6 <b>try</b> 17:15 20:10 43:14 63:21 73:3 87:10 109:14 110:21 116:21 131:4 135:18 141:20 152:9 187:16 189:19 208:4 227:17 235:12 251:10 256:1 281:19 324:16 367:23 <b>trying</b> 120:6 150:24 <b>tsca</b> 167:10 <b>tubal</b> 265:6 277:9 <b>tube</b> 277:14 <b>tubular</b> 262:3,5 <b>tucker</b> 2:13 3:12 <b>tuckerellis</b> 2:16 3:14 <b>tumor</b> 281:13 <b>tumorigenic</b> 119:7 <b>tumorpromoti...</b> 281:14,23 <b>tumors</b> 212:12 262:4 265:5,6 265:8,17 271:22 273:4 277:16 278:4,5 278:14 293:2 <b>turn</b> 53:2 95:6 95:10 164:11 346:20 367:22 <b>turning</b> 290:24 <b>turns</b> 273:18 368:15
--	---	---	--	---



<b>twice</b> 354:5 <b>two</b> 19:6 20:22 39:2 45:15 70:4 73:16 77:6 124:2 140:22 145:11 145:12 146:3 146:10,19 179:14 201:14 220:18 237:22 257:2 279:23 312:16 325:15 332:6 343:7 357:6,13 368:20 <b>twothirds</b> 42:23 43:22 <b>twoyear</b> 280:4 <b>tylenol</b> 70:12,14 <b>type</b> 52:7 60:11 140:19 154:3 212:16,17 214:21 216:6 224:2 246:18 246:19 261:20 264:17 266:1 270:5,13 271:8 276:24 283:14 289:13 300:7 309:13 360:4 361:17 <b>typed</b> 95:23 <b>types</b> 10:9 45:19 285:24 307:2 342:9 <b>typical</b> 14:21 231:19 356:22 <b>typically</b> 130:1 360:21 <b>typo</b> 369:20 <b>tze</b> 64:19 <hr/> <b>U</b> <hr/> <b>u</b> 180:1,13,14 <b>uhhuh</b> 17:13 169:2 221:5 292:20	<b>ultimately</b> 219:19 <b>un</b> 117:3 <b>unable</b> 124:8 126:11 200:18 302:17 304:22 309:18 <b>unaware</b> 103:5 <b>unclear</b> 113:23 <b>underlying</b> 4:22 24:3 144:7 197:20 288:1 301:7 305:15 305:21 306:2 320:2,8 326:1 <b>underneath</b> 95:15 97:5 <b>understand</b> 10:18,20 28:20 32:9 40:4 54:2 55:7 56:17 59:12,13 61:14 62:7 64:11 87:23 94:3,24 112:15 113:23 133:5,17 138:17,18,20 138:21 141:13 159:18 172:3 195:6 199:2 302:4 332:5 333:18 336:6 347:22 350:10 350:17 352:1 <b>understanding</b> 33:5 58:22 59:11 60:23 80:19,22 85:7 162:3 179:12 186:9,17 207:9 310:1 333:23 <b>understood</b> 11:1 147:23 190:1 237:10 309:2 <b>undertake</b> 345:24 <b>undisclosed</b>	5:14 <b>unethical</b> 222:5 282:10 285:8 321:7 364:14 <b>unfair</b> 264:5 <b>unfounded</b> 84:18 <b>uniform</b> 355:17 <b>uniformity</b> 137:15 355:7 355:15 <b>uniformly</b> 137:19 <b>union</b> 3:15 <b>unique</b> 289:22 <b>unit</b> 350:15 <b>united</b> 1:1 154:12 <b>units</b> 124:12 350:9 <b>university</b> 51:2 51:5 338:10 <b>unknown</b> 201:11 <b>unnecessarily</b> 261:9 <b>unnecessary</b> 187:1 <b>unpleasant</b> 52:21 <b>unsigned</b> 41:5 <b>unstable</b> 253:19 254:10 <b>update</b> 102:7 173:3 364:20 366:8 <b>updated</b> 20:22 358:7 <b>updates</b> 20:14 <b>upper</b> 81:7,16 <b>uptodate</b> 22:11 26:17 <b>urinary</b> 280:12 <b>usage</b> 157:14 158:19 160:19 160:22 301:15 325:11	<b>use</b> 12:22 24:22 27:7 66:23 70:17 109:5 112:5 113:2 146:3 147:19 150:16,18 151:15 152:7 159:1,7,22 160:6 161:19 161:22 162:24 163:19 165:1,7 165:11,13,16 169:7 174:11 174:13,18 181:16 182:2 182:16 187:2,9 193:6 199:22 200:2 229:1 261:19 264:16 270:5,12 271:7 276:23 277:18 289:2 300:10 311:11,22 312:12,14 316:3 331:13 331:16 344:4 362:14 <b>useful</b> 345:21 <b>user</b> 55:11 <b>users</b> 228:11 <b>usp</b> 272:17 <b>usually</b> 287:19 302:4 313:14 314:10 355:20 <b>uterus</b> 280:11 <b>utility</b> 306:16 <b>utilized</b> 225:23 342:18 348:19 <hr/> <b>V</b> <hr/> <b>v</b> 47:18 <b>vagina</b> 81:15 182:12 217:4,5 220:17 222:23 231:17 313:3 313:17,24 314:21 328:3	<b>vaginal</b> 140:12 140:15,20,23 182:9,18 185:10 204:24 205:1,3,7 219:24 293:14 313:12,14 314:7,17,24 315:1,11,13 355:2,4 <b>vaginally</b> 139:8 139:14 269:13 <b>vaginas</b> 222:7 227:12 235:23 <b>vaginosis</b> 205:8 205:8,15 <b>vague</b> 113:22 <b>valid</b> 117:17 126:22 128:6 131:3,11 222:16 <b>validated</b> 195:7 285:16 <b>values</b> 203:13 <b>vanillin</b> 52:19 <b>varied</b> 320:5 <b>varies</b> 44:14,20 130:9 301:5 309:9 319:24 <b>various</b> 63:13 90:5 109:15 151:8 198:8 <b>varnishes</b> 233:22 <b>vary</b> 302:7 306:17 <b>vaseline</b> 306:10 <b>verbatim</b> 99:2 101:3 <b>verbiage</b> 198:17 <b>verified</b> 369:4 <b>verify</b> 137:18 247:10 <b>version</b> 41:13 <b>versus</b> 45:16,18 <b>videographer</b> 3:23 9:2
---	---	--	---	---

104:22 105:2 192:1,5 245:18 245:22 294:16 294:20 333:6 333:10 371:9 <b>videotaped</b> 1:13 <b>viewed</b> 12:14 <b>virtually</b> 255:9 <b>vitae</b> 5:5 26:9,17 50:21 <b>vitamin</b> 52:19 <b>vitro</b> 6:13 106:22 109:17 118:10 196:5 196:18 197:16 218:5 235:6 285:22 287:12 291:24 328:7 <b>vivo</b> 106:22 109:18 114:18 118:10 197:16 218:5 287:13 <b>voice</b> 43:15 72:18 324:17 <b>volume</b> 23:4 246:6,14 247:13 248:8 269:20 284:15	282:24 294:24 295:13 296:1 298:18,19 336:5,21 351:7 352:6 353:20 361:2 364:17 365:1,7 366:3 367:10,23 <b>wanted</b> 38:23 54:20 78:10 206:12 <b>wants</b> 102:6 326:10 <b>warner</b> 51:18 52:24 53:13 <b>warnerjenkin...</b> 51:19,20,23 52:15 53:1,2,4 69:8,17 70:19 <b>warnerjenkin...</b> 70:9 <b>washington</b> 2:19 3:19 51:5 <b>wasnt</b> 53:21 83:4,9 92:19 107:19 108:4 111:10 123:7 124:9 125:4 126:4 136:22 137:5,20 138:7 199:11 209:24 211:10 226:2 232:17 260:24 303:6,7 320:9 344:1 345:22 361:21 <b>water</b> 129:2 <b>way</b> 69:20 76:11 83:22 111:13 112:8 136:1 154:21 228:4 229:6 264:20 267:9 294:3 295:17 304:9 334:24 336:5 336:23 338:17 <b>ways</b> 112:22	<b>web</b> 305:18 <b>website</b> 76:18 86:3 89:5 102:19 103:24 104:7 109:22 110:3 154:2 158:12 161:3 181:8 211:8 239:24 299:12 369:2 <b>websites</b> 90:5,9 91:6,14 109:21 111:3,10 299:9 304:17 <b>wed</b> 263:16 <b>wednesday</b> 13:12 <b>week</b> 20:22 354:5 <b>weeks</b> 272:20 356:24 <b>weiner</b> 23:3 <b>welcome</b> 25:3 140:2 196:2 197:2 225:3 339:5 365:10 <b>wellknown</b> 64:21 <b>went</b> 37:14 126:24 290:9 <b>weve</b> 33:17 34:17 80:10 172:18 189:6,8 189:17 195:19 218:4 260:7 275:24 288:16 302:14 322:9 334:4 364:13 364:20 <b>whats</b> 22:9 32:1 36:10 77:21 296:22,23 344:22 358:5,9 361:7 <b>whichever</b> 329:19 <b>wife</b> 34:1,13	44:5 58:12 <b>wifes</b> 34:2 <b>wikipedia</b> 5:16 100:7,20 101:5 102:3,7 103:9 371:1 <b>willing</b> 191:12 283:2 <b>windows</b> 189:4 <b>wish</b> 73:13 <b>withdraw</b> 121:7 128:19 136:14 158:18 165:24 176:18 249:22 <b>witness</b> 1:14 8:5 9:7,8 10:1 27:18 30:23 43:13,16 49:12 50:3,7 72:23 72:24 73:2 80:8,12 87:9 92:5 116:24 120:15 138:16 149:21 166:16 177:7 191:24 228:3 242:22 245:15 258:24 281:17,21 294:7,15 295:8 298:11 304:7 323:13 324:19 338:24 339:5 344:8 372:5,6 372:8 373:1 <b>witt</b> 118:16 <b>woman</b> 201:8,21 225:22 233:6 <b>women</b> 200:1 205:5 233:21 286:21 302:22 357:12,15 <b>wondering</b> 341:3 <b>wont</b> 40:14 336:6 <b>word</b> 92:5,6 93:16,16 94:5	94:5,18,18 96:3,3 97:11 97:11 98:4,5,9 98:9 103:10,10 135:16 172:11 218:18 242:11 246:10 266:18 367:11 370:24 370:24 <b>wordbyword</b> 100:13 <b>wordforward</b> 98:12 <b>words</b> 89:20 91:16 95:14,22 97:16 101:20 101:21 140:10 145:24 146:3 165:9,12,13 172:23 200:11 355:10 <b>work</b> 13:19 14:11 19:11 33:15 42:3,4,9 42:16 44:19 50:3,7 51:15 52:12 64:13 110:18 193:19 336:24 337:7 338:20 345:24 360:10 362:14 362:22 367:9 368:12 <b>worked</b> 51:18 52:2 53:4 57:4 63:3 68:15 70:11,14 292:3 342:1,4,6 <b>working</b> 37:22 43:23 46:10,13 48:6 49:3 52:22 57:10,15 247:18 261:22 264:21 277:3 337:19 <b>workplace</b> 233:22
---	--	--	--	--

<b>world</b> 153:2 283:18 284:17 356:10 <b>worlds</b> 51:21 <b>wouldnt</b> 175:11 215:20 219:9 220:22 228:23 283:20 294:5,8 355:24 <b>write</b> 58:1 116:22 <b>writings</b> 65:13 <b>written</b> 65:5,9 66:19 96:3 <b>wrong</b> 90:12 91:3 92:4 93:7 94:4,15,20 103:7 295:7 297:16 369:8 <b>wrote</b> 166:6 <b>wunderlich</b> 3:12 3:14 72:17,24 <b>wyatt</b> 2:18,20 <b>wyatts</b> 349:16	127:18 129:19 132:20 136:5 140:3 142:4,21 151:6 153:19 155:7 156:10 157:13 158:23 159:19 161:1,4 166:14,17 167:21 171:18 171:23 172:21 173:23 175:4 176:6 177:3,13 177:19 178:6,8 178:10,13,18 179:21 180:5,7 181:20 185:3 185:18 186:6 187:23 189:19 191:10 194:3 200:5 205:19 206:8 208:3,18 209:5,15,17 212:18 213:18 216:1 218:13 219:3 226:21 227:8 232:20 235:18 236:2 238:15 240:20 241:11 244:6 244:12,15 246:14,20 255:3 260:17 262:10,20 266:7 268:4,22 268:23 269:8 269:19 272:9 272:12 273:16 274:2,24 275:24 276:2,5 277:2,16 278:24 281:21 282:4 287:1 289:11 294:8 295:20 300:9 302:24 303:13 303:20 305:10 306:9 307:11	309:18 311:8 311:19 315:4 315:10 317:15 322:7,15,22 323:24 324:5 324:11 325:4 327:11 328:22 333:5 334:19 335:11 337:12 346:6 349:8,9 354:4 364:13 <b>year</b> 18:11 44:16 44:20,20 47:3 59:18 201:22 247:13,24 248:2,4 <b>years</b> 46:19 64:4 71:7 142:12 202:4,4 206:16 265:18 301:9 338:18 357:6 <b>yep</b> 98:20 168:5 241:22 271:16 290:22 321:21 <b>yesterday</b> 80:5 <b>yielded</b> 250:14 <b>york</b> 2:19 <b>youd</b> 16:24 38:4 119:12 166:19 191:8 267:6 268:1 <b>youll</b> 34:19 303:10,23 346:20 347:20 <b>youre</b> 17:11 19:24 22:17 25:3,8,10,17 26:2 27:24 30:7 32:3 37:18 58:14 62:10 83:12,16 88:9 90:20 92:17 93:20 102:24 108:16 109:1 112:5,21 115:20 116:23 129:14 130:8	130:11 132:20 133:12,13 138:9 141:14 145:12,15 146:10 147:16 151:1 153:15 160:8 165:9,13 177:11 184:20 184:21 196:2 197:2 198:7,17 208:13 209:18 213:21 224:17 225:3 235:5,18 237:12 238:7 247:8 255:14 256:10,19 260:19,19 270:20 274:13 278:20 282:2 290:11 304:8 305:14 310:18 311:6 315:5,24 317:24 318:18 319:2,7,18 322:11 327:14 331:23 339:5 355:10 365:9 <b>youve</b> 10:4 13:19 16:16 45:15 47:9 52:7,12 55:13 56:22 62:20 68:8 70:23 73:22 89:10 111:18 126:2 127:15 165:4 183:12 189:17 193:24,24 194:1 196:23 199:24 204:19 216:9 223:7 233:2 248:17 252:1 267:10 269:8 276:6,6 293:15 311:9 313:6,19 327:22,23,24	332:6 338:5 346:1 361:20 361:22 362:2 <hr/> <b>Z</b> <b>zeiger</b> 118:16 <b>zellers</b> 2:13,16 4:5 9:9,21 11:22 13:5 14:16,17 15:21 16:11,14 18:6 18:20 21:3,6 21:17 22:21 23:1,20 25:5 25:22 26:4,7 26:12,20 27:14 27:18,22 28:18 29:7 32:11 33:6 36:13,19 39:21 41:14 43:17 48:21 49:18 50:14 53:23 56:6,11 58:10 59:3 61:6,17 62:1,9 67:9,15 68:21 69:4 72:1,4 73:6,19 76:1 78:2,6,14 80:13 82:3,9 83:11 84:15 85:4,23 86:2,9 86:17,18 87:5 87:8,12 88:2 88:13 89:9 91:2,11,23 92:13,16 93:3 94:2,10,14 95:5,9,20,21 96:17 98:10,22 99:6,17 100:10 100:18,23 101:1,13 102:2 103:3,4,17,23 104:20 105:5 106:1,8 107:1 107:15 108:6
---	---	--	---	---

111:16 113:5	192:8 193:13	274:12 276:3	204:2 273:1	189:22 192:2,3
113:13,16	194:8 195:3	277:4 278:17	330:16,20	192:22 236:8
114:3,21 115:8	196:6,14,20	280:14,16,20	355:11,11	236:15 258:3
117:4 118:1	197:17 199:13	281:2 282:13	<b>000</b> 272:19,20	266:14 313:5
120:1,10,20	200:23 201:6	282:20,24	286:6 355:12	372:13
121:22 122:8	201:18 202:2,7	283:6,10,11,21	<b>01</b> 294:17,18	<b>120</b> 5:19
122:13 123:4	203:1,5 204:13	284:8 285:1	<b>04</b> 333:7,8	<b>127</b> 284:16
123:15,21	207:2,8,11	286:9,18 287:4	<b>05</b> 245:21,23	<b>12th</b> 40:23
125:11 126:8	208:6,12,20	288:21 290:17	330:16,20	<b>13</b> 4:16 5:13
127:7,12 128:8	212:21 213:16	292:5 294:9,13	355:11	96:16,19 209:2
128:18 129:10	214:16 215:8	294:23 295:12	<b>07</b> 1:16 9:5	<b>14</b> 5:16 100:17
131:9,17 133:3	215:14 216:5	295:23 297:12	105:1,4	100:19,22,23
133:19 134:16	216:17 217:19	298:1,14 299:1	<b>07962</b> 3:8	101:8 140:6,13
135:2 136:7	218:6 219:12	300:6,23		<b>141</b> 135:4
137:1 138:15	221:1,9,16	301:21 302:8	<b>1</b>	<b>142</b> 355:24
138:23 141:1,8	222:13 223:1,9	302:19 303:2,8	<b>1</b> 4:15 11:9,10	<b>1440</b> 2:19
141:15 142:15	223:14,23	303:15 305:5	11:24 121:16	<b>15</b> 5:17 29:9
142:22 143:8	224:5 225:9,20	307:1,8,18	124:9 151:3	72:12 103:18
143:16 145:14	226:4,9,12,14	308:8 309:5,11	162:12 164:14	103:21,22
146:12 147:1	227:3,13,21	309:21 311:2	192:4,7 202:20	104:1,7 147:10
149:4,23 150:8	228:6,16	312:5,7 313:1	203:18,21	147:14 148:11
152:2 153:10	229:15 230:1	314:3 315:14	204:2 243:15	148:22 162:11
153:12 154:16	231:3 232:9	317:8,18	243:20 273:1	175:2 329:22
155:9,16 157:5	233:14 234:4	318:10,12,23	280:8 284:16	<b>150</b> 273:1
157:22 158:7	234:11,21	319:4,9,13,19	286:6 292:14	<b>1510</b> 3:3
158:16 159:13	235:20 238:4	320:22 321:17	355:12 375:6	<b>152</b> 167:16
160:11 161:9	239:10,17,19	322:10 323:1	<b>10</b> 5:8 27:15	<b>155</b> 5:20
161:16 163:6	240:22 243:7	323:15 324:20	29:6,8,11,13	<b>157</b> 5:22
165:23 166:22	245:4,13,16	326:14,21	29:24 44:21	<b>16</b> 5:19 8:9 29:9
167:5,12,17	246:1,15 247:5	328:14 329:1	72:7 74:23	120:9,11 121:4
168:23 170:4	248:3,11	329:12 330:6	104:23,24	121:9,13
171:1,10 172:4	249:11 250:19	331:3,22 332:8	164:14 168:11	194:22 195:12
172:12,15	251:8,19,22	332:22 333:1	331:4	199:6,24 201:8
173:11,14,18	252:7,11,18	339:6 340:18	<b>100</b> 3:13 5:16	234:24 288:8
175:23 176:10	253:4,15 254:1	340:21,24	42:15 306:13	<b>160</b> 288:8
176:16 177:3	254:19,22	342:24 345:11	<b>101</b> 276:1,2	<b>162738</b> 1:6
177:10 181:6	255:18,20	346:9 347:16	<b>103</b> 5:17 23:4	<b>163</b> 6:5 164:11
181:12,14,21	256:8 258:7,16	348:8,22 351:3	272:20	164:17
182:19,21	259:1,12	353:24 359:1	<b>11</b> 4:15 5:9 8:9	<b>164</b> 164:20
183:4,14 184:8	260:14 261:1	359:19 360:23	81:4 85:22,24	168:12
184:12,23	262:22 263:9	363:12 364:6	105:1,4 186:4	<b>167</b> 6:6
186:3,18	263:21 264:1,8	364:16 365:13	186:5 192:20	<b>17</b> 5:20 29:9
187:13,15	264:14 265:1	370:18 371:5	323:6 368:15	155:8,10
188:1,16,23	267:12,19	<b>zero</b> 257:16	<b>114</b> 248:19	279:22
189:11,19	268:17 269:16		<b>1170</b> 2:9	<b>171</b> 6:8
190:1,2,22	270:10,19	<b>0</b>	<b>12</b> 5:11 47:6	<b>173</b> 6:9
191:14,22	271:12 273:19	<b>0</b> 202:20 203:21	89:6,7,18	<b>175</b> 73:15

314:19,21 368:14 <b>177</b> 6:12 <b>17th</b> 354:8 <b>18</b> 4:17 5:22 95:10,11 96:2 98:5 145:4 148:3,18 150:2 157:21,23,24 158:9 160:24 173:6 185:15 333:9,11 <b>18th</b> 20:12 365:23 <b>19</b> 6:5 7:9 148:3 163:4,5 164:12 168:11 185:16 272:23 346:22 <b>1950s</b> 301:9 <b>1978</b> 247:18 <b>1979</b> 117:16 <b>1987</b> 115:19 117:24 118:6 118:13 247:18 <b>1989</b> 117:12 118:17 <b>1991</b> 51:6 <b>1992</b> 53:5 <b>1994</b> 247:18 248:7 <b>1995</b> 53:5 66:13 68:7,24 284:18 <b>1999</b> 310:5 <b>1st</b> 15:2,6,23	<b>20</b> 6:6 44:22 72:13 144:23 148:3 167:11 167:13,18,22 286:4 329:23 372:13 375:19 <b>2000</b> 66:13 68:7 68:24 <b>20004</b> 3:19 <b>20005</b> 2:19 <b>2002</b> 116:17 248:13 <b>2003</b> 51:9 117:20 <b>2005</b> 22:10 181:17 <b>2006</b> 118:22 284:15 <b>2007</b> 23:6 <b>2008</b> 96:5 352:19 <b>200page</b> 367:10 <b>2010</b> 47:15 <b>2011</b> 47:6 <b>2014</b> 116:6 117:21 142:14 352:19 354:7 <b>2018</b> 5:21 13:12 14:3 15:2,6 17:8 37:5 38:7 40:23 41:1 80:4 <b>2019</b> 1:11,16 9:4 16:1 18:11 372:14 <b>202</b> 2:20 3:19 268:12 <b>203</b> 6:15 <b>207</b> 53:2 <b>20plus</b> 71:7 <b>21</b> 4:19 6:8 149:5 151:4,10 153:13,17,23 154:2,9,13,18 171:9,11 172:19 210:11 218:8 233:15	266:15 281:3 287:5,11 294:19,22 <b>213</b> 2:15 <b>218</b> 2:4 <b>22</b> 4:20 6:9 115:24 116:8 116:15 144:19 173:17,19 174:4 218:24 226:9 <b>23</b> 4:21 6:12 140:18 177:15 177:17 178:9 179:3 180:6 <b>239</b> 6:16 <b>23rd</b> 48:2 <b>24</b> 6:15 203:3,4 203:6,12 230:16 <b>245</b> 6:18 <b>25</b> 4:23 6:16 44:12,16 239:9 239:12,16,17 240:3 260:16 284:15 <b>250</b> 280:8 <b>2562550</b> 3:14 <b>258</b> 6:20 <b>26</b> 5:5,6 6:18 233:16 245:24 246:3,7 247:2 247:16 248:13 248:23 249:8 249:16 251:15 256:13 335:2 <b>263</b> 6:21 <b>267</b> 275:17 <b>2670058</b> 3:9 <b>269</b> 6:23 <b>27</b> 6:20 100:1,5 101:5 258:6,8 258:13 296:14 <b>275</b> 7:5 <b>28</b> 6:21 263:8,10 <b>29</b> 5:8 6:23 269:15,17	271:14 284:16 <b>290</b> 7:6 <b>29th</b> 291:5 <b>2a</b> 243:12 358:8 358:9,10 <b>2b</b> 198:20 240:23 242:4,7 243:8 244:14 244:16 245:9 276:15,17,20 <b>2nd</b> 15:23 <hr/> <b>3</b> <b>3</b> 4:17 18:18,19 18:21 19:4,22 20:3 98:14,16 99:8 121:18 160:4 192:6 198:23 208:21 238:17 240:4 240:13 241:2 241:21 242:15 245:21,23 256:13 259:3,7 259:13,23 260:9 263:5,7 266:22 267:5 269:3,4 271:14 272:19 274:21 290:3 291:3 292:12,13,14 292:19,24 293:9 295:21 295:24 364:21 364:24 367:23 368:7,9 <b>30</b> 7:5 72:7 275:22,23 295:7 311:15 373:16 <b>300</b> 35:10 <b>307</b> 258:13 <b>308</b> 258:14 <b>30th</b> 13:12 <b>31</b> 7:6 290:16,19 295:1 372:13 <b>314</b> 3:14	<b>32</b> 7:8 102:10,17 104:4,17 346:12,15 348:5 <b>320</b> 258:14 <b>33</b> 7:10 349:12 349:14 351:15 368:13 370:1 <b>333</b> 4:6 <b>3377</b> 1:23 <b>339</b> 4:7 <b>34</b> 7:12 192:21 351:5,8,9,13 351:16,18 368:13 370:1 <b>341</b> 4:8 <b>346</b> 7:8 <b>349</b> 7:10 <b>35</b> 7:13 192:17 192:19 351:11 352:4,8,9 353:21 354:3 <b>350</b> 3:8 <b>351</b> 7:12 <b>352</b> 7:13 <b>36</b> 269:19,20 304:3 <b>36104</b> 2:4 <b>363</b> 269:22 <b>364</b> 4:5 <b>365</b> 2:9 <b>367</b> 4:6,8 <b>37</b> 186:5 <b>370</b> 1:23 <b>3717008</b> 2:20 <b>376</b> 375:6 <b>38</b> 304:3 <b>39</b> 209:10 <b>3910197</b> 3:4 <hr/> <b>4</b> <b>4</b> 1:11 4:19 21:15,16,19,23 22:5 95:15 96:2 102:14 121:19 238:11 238:15 268:7
--	--	--	---	---



271:14 294:17 294:18,19,21 294:22 296:11 296:11 301:1,1 303:17,17 315:16,19 321:18 323:2 325:6 327:17 331:4 356:5 <b>41</b> 209:3 <b>42</b> 311:20 312:1 312:8 <b>42nd</b> 170:10 <b>43</b> 140:6,13 304:4 <b>4303301</b> 2:15 <b>437</b> 248:24 <b>438</b> 249:8 <b>45</b> 189:9,22,23 <b>46</b> 175:1 <b>47</b> 175:2 192:2,3 <b>48</b> 289:24 290:6 <b>48th</b> 6:5 <b>4th</b> 1:15,18 9:4 41:1 <hr/> <b>5</b> <b>5</b> 1:16 4:20 22:19,24 23:8 23:13 64:2 102:14 209:14 249:17 256:13 315:16,19 325:5,8,16,17 326:16,24 329:4 330:9,11 330:16 333:7,8 333:9,11 355:11 371:12 371:14 <b>50</b> 104:23,24 220:11,11 230:15 352:24 353:1,3 <b>500</b> 1:18 <b>504</b> 2:10 <b>512</b> 3:4	<b>515</b> 2:14 <b>517</b> 249:9,9 <b>518</b> 249:18 <b>519</b> 250:7 <b>520</b> 247:2,7 248:18 254:4,5 256:13 <b>522</b> 248:19 249:1,9 <b>53</b> 135:23 245:19,20 <b>55</b> 192:4,7 <b>550</b> 248:21 <b>5672</b> 1:23 <b>59</b> 1:16 371:12 371:14 <b>591</b> 1:23 <hr/> <b>6</b> <b>6</b> 4:21 23:18,19 23:22 24:1,15 147:4,14 148:1 148:1,22 156:20 162:11 168:24 169:6 173:6 185:16 272:20 321:18 <b>600</b> 3:13 34:22 35:4 <b>61</b> 140:18 <b>6174</b> expires 372:13 <b>625</b> 279:19 280:2 <b>63102</b> 3:13 <b>66</b> 26:24 177:4,6 <b>69</b> 26:24 <hr/> <b>7</b> <b>7</b> 4:23 6:10,15 25:20,21,24 26:23 28:17 30:20 41:15 193:15 194:22 195:11 199:6 199:24 201:8 203:10 218:8	218:24 226:9 233:15 257:12 323:2 348:2 372:14 <b>70</b> 47:2 301:8 303:22 <b>70130</b> 2:9 <b>78701</b> 3:4 <b>7992847</b> 2:10 <b>7up</b> 51:24 <hr/> <b>8</b> <b>8</b> 5:5 26:10,11 26:14,16 257:2 257:7 311:16 325:6 327:17 <b>800</b> 2:5 13:23 <b>8015</b> 13:23 <b>8022</b> 13:24 <b>8027</b> 13:24 <b>8035</b> 13:24 <b>8041</b> 14:1 <b>8043</b> 14:1,2 <b>80week</b> 292:21 293:12,14 <b>816</b> 3:3 <b>82</b> 246:6,14 247:13 248:8 <b>8285371</b> 3:19 <b>84</b> 272:12 <b>85</b> 5:9 <b>87</b> 115:17 <b>877</b> 1:23 <b>89</b> 5:11 271:14 <b>8982034</b> 2:5 <b>8oxide</b> 255:7 257:9,12 <b>8th</b> 354:6 <hr/> <b>9</b> <b>9</b> 1:16 4:5 5:6 9:5 26:19,21 26:23 27:3,19 28:9 74:22 164:11,15 168:11 208:21 <b>900712223</b> 2:15	<b>917</b> 1:23 <b>96</b> 5:13 <b>973</b> 3:9 <b>975</b> 3:18 <b>99</b> 272:18
---	--	---	--